New Harquahala Generating Company, LLC
HARQUAHALA GENERATING PROJECT
2530 North 491st Avenue
Tonopah, Arizona 85354
Permit Number V99-015
Incorporates Minor Mods 1-17-02-01, 9-27-02-01 and 11-22-02-01
January 4, 2007

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GENERAL PERMIT CONDITIONS:

TECHNICAL SUPPORT DOCUMENT

Permit Number V99-015
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TECHNICAL SUPPORT DOCUMENT

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1. IDENTIFYING INFORMATION

Facility Name:	New Harquahala Generating Company, LLC Harquahala Generating Project
Address:	2530 N. 491st Avenue (FedEx/UPS) P.O. Box 727 (U.S. Mail)
City, State, Zip:	Tonopah, AZ 85354
Date Application Received:	The Title V permit renewal application was received from New Harquahala Generating Company, LLC on November 10, 2005 which included a Title V significant permit revision application. This application was superseded by a Title V permit renewal application dated December 16, 2005 and a significant permit revision application dated March 28, 2006. MCAQD is processing the Title V permit renewal and the significant permit revision in parallel.

2. INTRODUCTION

This is a support document intended to provide additional information associated with the issuance of a significant permit revision and a Title V air quality permit renewal to the New Harquahala Generating Company, LLC (NHGC) Harquahala Generating Project (HGP). However, this Technical Support Document (TSD) is not part of the Permit and is not a legally enforceable document.

2.1 Attainment Status of Source Location:

NHGC is located in Tonopah, Arizona, in Maricopa County. Based on the July 1, 2005 version of 40 CFR 81.303, NHGC is located in an area designated as attainment/unclassifiable for all conventional pollutants, i.e., those pollutants for which EPA has established National Ambient Air Quality Standards (NAAQS).

Portions of Maricopa County are designated as nonattainment for PM10 and ozone. However, NHGC is located approximately 18 miles west of the Phoenix PM10 nonattainment area boundary and approximately 28 miles west of the Phoenix-Mesa ozone nonattainment area boundary.

2.1.1 Ozone Attainment Status:

1-Hour Standard - On April 21, 2004, the State submitted the One-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area (assumed to include the Phoenix metropolitan nonattainment area). On March 21, 2005, EPA proposed to approve Arizona's request to redesignate the Phoenix metropolitan 1-hour ozone nonattainment area from nonattainment to attainment (see 70 FR 13425), and gave final approval of the redesignation on June 14, 2005 with an effective date of June 14, 2005 (see 70 FR 34362).

The 1-hour standard was revoked effective June 15, 2005 for all areas in Arizona (see 40 CFR 81.303 as amended by 70 FR 44470 - 44478) and no longer applies.

8-Hour Standard - On July 18, 1997 (62 FR 38856), EPA revised the ozone NAAQS to establish an 8-hour standard; however, in order to ensure an effective transition to the new 8-hour standard, EPA also retained the 1-hour NAAQS for an area until such time as it determines that the area meets the 1-hour standard. See revised 40 CFR 50.9 at 62 FR 38894 and the above discussion regarding the status of the 1-hour standard for the Phoenix metropolitan 1-hour ozone nonattainment area. As a result of the actions described above, the 8-hour standard has replaced the 1-hour standard for ozone in the Maricopa County nonattainment area.

NHGC is located outside of the area that has been designated as basic nonattainment for the 8-hour standard (see July 1, 2004 version of 40 CFR 81.303). Therefore NHGC is located in an attainment area for the 8-hour ozone standard. Accordingly, ozone and its precursors (NOx and VOC) are regulated under the PSD program.

2.1.2 PM/PM10 Attainment Status:

EPA has deleted Arizona attainment status designations (attainment, unclassifiable and nonattainment) affected by the original national ambient air quality standards (NAAQS) for particulate matter measured as TSP (On June 3, 1993 EPA published a final rulemaking action revising the prevention of significant deterioration particulate matter increments, so that the increments are measured in terms of PM10. Section 107(d)(4)(B) of the Clean Air Act authorizes EPA to eliminate all area TSP designations once the increments for PM_{10} become effective).

No areas in Arizona have been designated as nonattainment for PM2.5. As noted previously, NHGC is located outside of the Maricopa County PM10 nonattainment area. Therefore, PM10 emissions are regulated under the PSD program.

2.2 Major Source Status with Regard to Prevention of Significant Deterioration (PSD)

MCAPCR Rule 240 §210.2 (5/7/03 version) states that "Any stationary source located in an attainment or unclassifiable area that emits, or has the potential to emit, 100 tons per year or more of any conventional air pollutant if the source is classified as a Categorical Source, or 250 tons per year or more of any pollutant subject to regulation under the Act if the source is not classified as a Categorical Source. NHGC is classified as a categorical source and has the potential to emit greater than 100 tons per year of NOx, CO, VOC, and PM10. Thus, the facility is a major stationary source under the PSD regulations.

2.3 Major Source Status with Regard to Hazardous Air Pollutants (HAPs):

Based on the calculations and supporting documentation provided in the NHGC permit application, facility-wide potential HAP emissions do not exceed 10 tons per year of any individual HAP or 25 tons per year of any combination of HAPs. Therefore the facility is not a major source of HAP emissions as defined in 40 CFR 63.2.

3. PERMITTING HISTORY

NHGC began operating under permit V99-015 and is currently authorized to operate under that permit. The following timeline presents a summary of the history on file:

March 17, 2001: Title V/PSD permit was issued to Harquahala Generating Company, LLC.

September 11, 2001: Notification of construction commencement received by the Department from Harquahala

June 18, 2002: The minor modification (1-17-02-01) provided for the following changes to the facility and permit:

- The addition of steam augmentation to boost generating capacity during periods of increased demand.
- Changing the power rating of the emergency back-up diesel generator from 1400 kW to 1500 KW
- Increasing the maximum cooling tower recirculation rate from 103,230 to 135,000 gallons per minute for each of the two cooling towers.
- The installation of ultra-high efficiency drift eliminators to decrease the cooling drift rate from 0.0005% to 0.0003%.
- The change of the cooling tower drift emission factor from 1.093 E-08 (0.0005% drift) to 3.288 E-09 (0.0003%) to reflect the corresponding change in cooling tower drift rate.

October 30, 2002: Most of the changes were made and the permit modification was originally issued in the previous permit revision, however due to an administrative error there were two omissions and a typographical error. These administrative errors were subsequently corrected on October 30, 2002, and the corrected version of the modified permit was re-issued to the applicant.

The following administrative corrections were performed:

- Footnote j of condition 18.A.2 - an emission factor for the calculation of PM_{10} emissions was corrected from 1.093-E-08 to 3.288E-09. A 0.0005% drift rate was also changed to 0.0003%.
- Condition 19.C - 0.0005 was corrected to 0.0003
- The word towers" was changed to "towers' ".

January 30, 2003 Initial Start up of Combustion Turbine Unit 1 (CTG1)

March 26, 2003: Accelerated Minor Modification.

- Changed the term “Combustion Turbine” to “Combined Cycle Unit” in permit condition 18.A.2 and throughout the permit.
- In Table 1, the allowable PM_{10} emissions were decreased to 3.1 tpy from 4.12 tpy.
- In Table 3, the allowable hourly CO emissions for each combined cycle unit during SU/SD were increased to 2,300 pounds from 2,000 pounds during a cold start

- Permit condition 18.A.2)c), the definition of startup was changed from 75% of nameplate capacity to 75% of rated capacity.
- Modified permit condition 18.A.2.g to reflect the requirements of 40 CFR 60 subpart GG.
- Footnote j of condition 18.A.2 – the assumption of 50% of particulate being PM_{10} was changed to 31.5 %. This was the reason the emission factor for PM_{10} was also decreased from 3.288E-09 to 2.071 E-09.
- The cooling tower TSD limit was increased from 7,300 to 11,000 ppm
- The ammonia injection rate that triggers additional source testing was removed and replaced with more frequent testing (every 12 months following 3-year period after initial startup or catalyst replacement).

May 29, 2003: Initial Start up of Combustion Turbine Unit 2 (CTG2)

July 30, 2003: Initial Start up of Combustion Turbine Unit 3 (CTG3)

November 9, 2005: Title V Permit Renewal with Significant Revision Application submitted

December 15, 2005: Title V Permit Renewal (without Significant Revision) Application submitted

February 7, 2006: Order of Abatement by Consent (OAC) V-0007-06-GLB signed resolving Notice of Violation AU-01-26-06-01for failure to file a timely application for Air Quality Operating Permit renewal. Order terminates on the date MCAQD issues a renewed Air Quality Operating Permit to NHGC or one (1) year from the effective date of the Order, whichever occurs sooner.

March 28, 2006: Updated Title V Permit Renewal with Significant Revision Application submitted

4. REVISIONS MADE TO EXISTING PERMIT CONDITIONS

In their significant revision permit application, NHGC requested various changes to existing permit conditions. The subsections below document the Applicant-requested permit changes and corresponding MCAQD technical/regulatory analyses and conclusions.

4.1 Name and Address Update

Requested Change:

NHGC requested that the Permittee Name and Facility Address fields on the permit cover/signature page be updated to reflect the permit transfer effective June 30, 2003. The updated information is as follows:

New Harquahala Generating Company, LLC
HARQUAHALA GENERATING PROJECT
2530 North 491st Avenue
Tonopah, Arizona 85354

Conclusion:

The Permittee name and address changes were made as requested.

4.2 Permit Expiration Date

Requested Change:

NHGC requested that the permit cover/signature page explicitly state the permit issuance and expiration date, rather than reference the permit cover letter.

Conclusion:

MCAQD will scan the permit signature page including the issuance and expiration dates and attach this with the electronic permit file.

4.3 Harmonizing CEMS QA/QC procedures – 40 CFR Part 60 and 40 CFR Part 75

Requested Change:

Section 19.G.1 of the Title V air permit requires that the Continuous Emissions Monitoring Systems (CEMS) meet or exceed all applicable design, installation, operations, quality assurance, and all other applicable requirements of 40 CFR Parts 60 and 75. The facility must comply with both the New Source Performance Standards (NSPS, 40 CFR 60) and Acid Rain Monitoring (40 CFR 75) continuous emissions monitoring standards, including Quality Assurance and Quality Control (QA/QC) procedures.

NHGC requested that Condition 19.G.1 be revised to allow the use of Part 75 QA/QC procedures the combined cycle unit NOx CEMS as follows:

G. Operational Requirements for the Continuous Emissions Monitoring Systems

The CEMS shall meet or exceed all applicable design, installation, operational, quality assurance, and all other applicable requirements of 40 CFR Parts 60 and 75. The procedures under 40 CFR 60.13 and 75.12 shall be followed for the installation, evaluation, and operation of these CEM systems. Compliance with the quality assurance and quality control requirements in 40 CFR 75, Appendix B, for the NO_x monitoring system shall be allowed in lieu of the quality assurance and quality control procedures in 40 CFR 60, Appendix F.

Analysis

Revisions to NSPS subpart GG were promulgated on July 8, 2004. Among other things, EPA harmonized CEMS requirements by allowing the use of Part 75 certification and QA/QC procedures for the purpose of the NSPS. The following citations from the July 8, 2004 preamble and revised rule document the changes:

"…many of the units affected by subpart GG are already required to install and certify CEMS for NOx under other requirements, such as the acid rain monitoring regulation in 40 CFR part 75, or through conditions in various permit requirements. To reduce the burden on these units, we are allowing the use of CEMS units that are certified according to the requirements of 40 CFR part 75. The 40 CFR part 75 testing procedures to certify the CEMS are nearly identical to those in 40 CFR part 60, and 40 CFR part 75 has rigorous quality assurance and quality

control standards. Therefore, it is appropriate to allow the use of 40 CFR part 75 CEMS data for subpart GG compliance demonstration."[1]

"If the owner or operator has installed a NOx CEMS to meet the requirements of part 75 of this chapter, and is continuing to meet the ongoing requirements of part 75 of this chapter, the CEMS may be used to meet the requirements of this section, except that the missing data substitution methodology provided for at 40 CFR part 75, subpart D, is not required for purposes of identifying excess emissions. Instead, periods of missing CEMS data are to be reported as monitor downtime in the excess emissions and monitoring performance report required in §60.7(c)."[2]

Conclusion:

The language of NSPS subpart GG, as revised on July 8, 2004, allows the requested flexibility with regard to NOx CEMS procedures. However, EPA Region 9 has taken the position that Part 75 QA/QC provisions as applicable to low-span CEMS and low emission rate units are insufficient for the purpose of BACT. Where reduced stringency QA/QC is provided under Part 75, the source must meet the corresponding requirements of 40 CFR 60 Appendix F. Specifically:

(1) *Calibration Error: Monitors with span values less than or equal to 50 ppm utilizing the alternative 5 ppm performance specification in 40 CFR Part 75 shall meet the Calibration Drift performance specification and QA/QC requirements of 40 CFR 60 Appendix B: Performance Specification 2 (PS-2) and Appendix F.*

(2) *Linearity: Monitors with a span values less than or equal to 30 ppm exempted from linearity check requirements under 40 CFR Part 75 and monitors utilizing the alternative 5 ppm difference performance specification in 40 CFR Part 75 shall meet the Relative Accuracy performance specifications and Cylinder Gas Audit (CGA) or Relative Accuracy Audit (RAA) requirements of 40 CFR 60 Appendix F.*

(3) *Relative Accuracy Test Audit (RATA): Monitors utilizing the alternative 0.020 lb/MMBtu RATA performance specification in 40 CFR Part 75 shall meet the Relative Accuracy performance specifications and RATA requirements of 40 CFR 60 Appendix F.*

As documented in Section 4.9 of this TSD, MCAQD reorganized the permit, moving the CEMS requirements from Section 19 – Operational Requirements to Section 20 – Monitoring and Recordkeeping. NOx CEMS requirements referencing the applicable provisions of 40 CFR Part 75 and Part 60 are contained in Section 20.A.3 of the revised permit.

4.4 Periodic Tuning of DLN Combustors and SCR Systems

Requested Change:

NHGC requested that the permit be revised to allow periodic tuning of dry low NOx (DLN) combustors and SCR systems without creating noncompliance with the applicable NOx BACT limits. According to NHGC, tuning of the DLN and SCR systems will result in improved pollution control efficiency, better control of the ammonia use, and combustion optimization. However, tuning activities may result in brief excursions above the applicable 2.5 ppmv NOx

[1] See FR 69 41348, July 8, 2004.
[2] 40 CFR 60.334(b)(3)(iii).

BACT emission limit. This is due to the need to operate the combined cycle unit(s) at low load or other non-ideal combustion conditions to achieve tuning objectives.

The expected duration of tuning activities is two 10-hour days for each semi-annual activity, as well as 10 hours for major maintenance activities associated with the combustion section of the turbines (per unit). NHGC requested that the permit be revised to incorporate 50 hours per year per combined cycle unit of allowed operation in tuning mode, and that the warm/hot start/shutdown emission limits for NOx, CO, and VOC would apply during tuning events.

Analysis

DLN combustors are an integral part of the combustion process, utilizing pre-mixed air/fuel technology and staged combustion to minimize flame temperatures and thereby reducing thermal NOx formation. DLN combustors generate NOx emissions in the range <=35 ppmvd at 15% O_2, versus approximately 165 ppmvd at 15% O_2 for conventional combustor technology.

The NHGC combined cycle units utilize selective catalytic reduction (SCR) for post-combustion NOx control to achieve compliance with the 2.5 ppmvd NOx limit (at 15% O_2). SCR is a process that involves removal of NOx from the flue gas with a catalytic reactor. In the SCR process, ammonia injected into the combustion turbine exhaust gas reacts with nitrogen oxides and oxygen to form molecular nitrogen and water vapor. The SCR reactions take place on the surface of a catalyst. The function of the catalyst is to effectively lower the activation energy of the NOx decomposition reaction. Technical factors related to this technology include the catalyst reactor design, maintaining the optimum operating temperature, sulfur content of the fuel, and design and proper operation of the NH_3 injection system.

The requested permit revision will allow tuning to be completed on the NHGC combustion turbines and associated SCR systems. Tuning activities would be conducted a minimum of twice per year, on each unit, typically planned for spring and fall. This timing allows for optimal settings as they relate to ambient conditions. Tuning may also be required following maintenance work on the combustion systems or SCR components.

Optimal performance of the DLN combustors and SCR system requires periodic tuning to adjust the combustion dynamics and ammonia injection system in order to achieve optimum NOx control efficiency. All tuning operations will be performed in accordance with the turbine manufacturer's procedures using qualified personnel. During DLN tuning, the procedure requires that the SCR continue to operate to minimize NOx emissions. The CEMS data acquisition system will also be programmed to receive a command initiating "tuning in progress" and will employ the "alternate" emissions limits for display and reporting purposes.

All emissions during tuning are recorded by the CEM systems, and are counted towards the annual emissions limitations, which remain unchanged. NHGC demonstrated in their permit application that given the same number of operating hours; tuning of the DLN combustors and SCR systems results in an overall decrease in annual NOx emissions. The example below (from the permit application) illustrates the benefits of DLN and SCR tuning for 6,000 operating hours in a typical year. The example utilizes 50 hours of tuning per year and results in a nominal 8% reduction in NOx emissions from periodic tuning, equating to a reduction of more than two tons per year for a single CT/HRSG.

WITHOUT DLN/SCR TUNING

Hours per year per CT/HRSG	Ambient Temperature (deg F)	Load Condition (% CT Load)	GT Heat Input (million Btu/hr, HHV)	Stack NOx (lb/hr)	NOx (TPY)
4000	36	BASE	2530.8	24.2	48.47
500	36	90%	2286.7	21.9	5.47
500	36	80%	2094.4	20.1	5.01
500	36	70%	1884.1	18.0	4.50
500	36	60%	1681.6	16.0	4.01
0	36	Tuning	2530.8	151.0	0.00
6000			**Tons per year of NOx without tuning**		**67.48**

WITH TUNING (Nominal 8 % reduction in NOx emissions)

Hours per year per CT/HRSG	Ambient Temperature (deg F)	Load Condition (% CT Load)	GT Heat Input (million Btu/hr, HHV)	Stack NOx (lb/hr)	NOx (TPY)
3990	36	BASE	2530.8	22.3	44.48
490	36	90%	2286.7	20.1	4.94
490	36	80%	2094.4	18.5	4.52
490	36	70%	1884.1	16.6	4.06
490	36	60%	1681.6	14.8	3.62
50	36	Tuning	2530.8	151.0	3.78
6000					**65.39**

Improvement due to tuning is 2.09 tons per year per CT/HRSG

Conclusion:

Tuning events are conducted on an infrequent basis and are required to maintain efficient operation of the combined cycle units and associated SCR control systems. The existing permit does not provide any allowance for tuning, therefore potentially creating a disincentive. Tuning is expected to reduce actual annual emissions, and there will be no increase in allowable annual emissions of NOx, CO, and VOC. The short-term (lb/hr) emission limits applicable to tuning/testing mode operation are consistent with those established for warm/hot start/shutdown. NHGC is required to monitor NOx and CO emissions using CEMS to demonstrate compliance with short-term and annual emissions limitations, which remain unchanged.

The permit was revised to incorporate tuning/testing operation emission limits, monitoring and recordkeeping, and reporting provisions. Although NHGC did not specifically address testing in its request, information from other combined cycle power plants in the County indicates the potential need to conduct periodic generator certification testing. To address this, the revised permit language was structured generally to include tuning and testing activities not limited to the specific categories identified in the permit application. The revised permit requires submittal of a tuning and testing schedule for the combined cycle units by December 31st of each year for the following calendar year and 24-hour advanced notification prior to any unscheduled tuning/testing activity. Total annual operation in tuning/testing mode (excluding periods of tuning/testing during which normal operating limits are complied with) is limited to

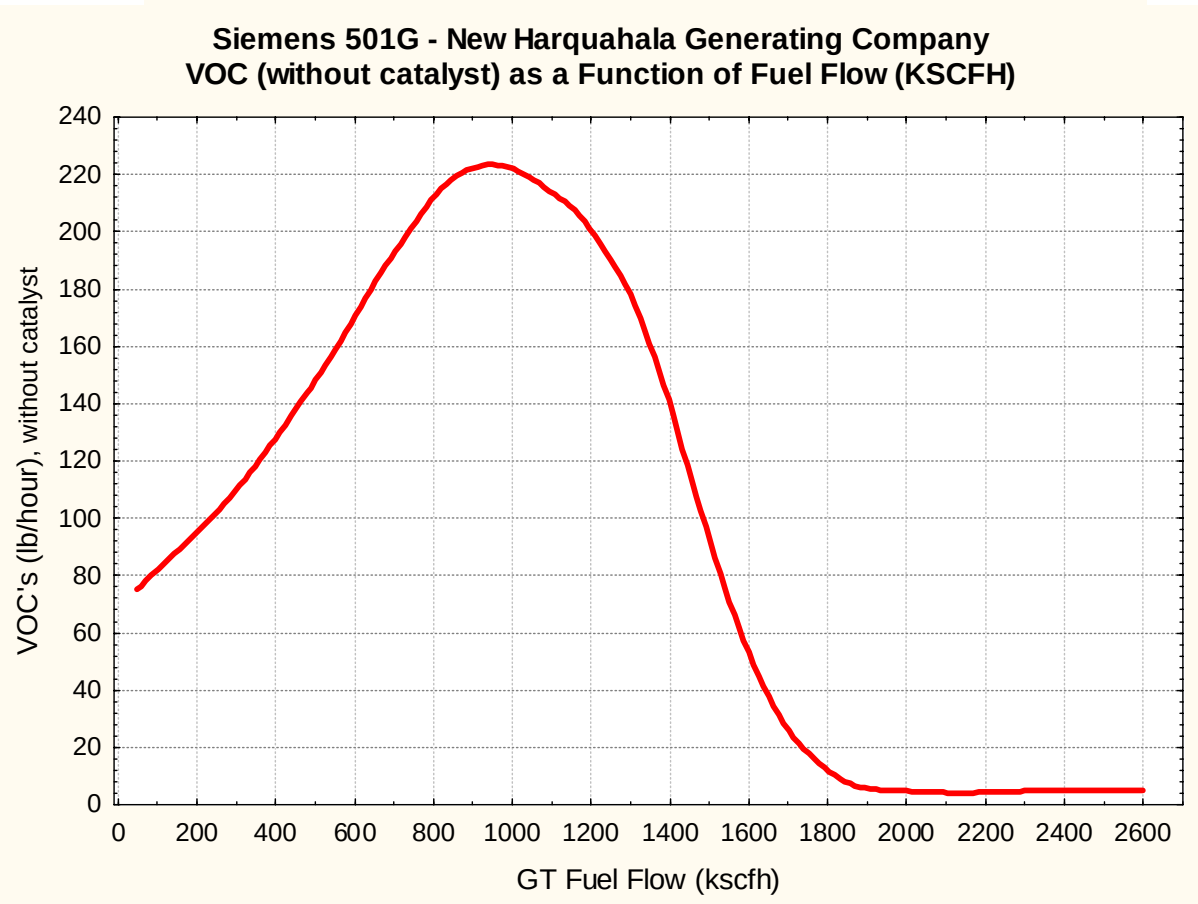
50 hours per calendar year per combined cycle unit. Additionally, the revised permit specifies that no more than one combined cycle unit shall be in tuning/testing mode at any time.

4.5 VOC Emissions Calculation Methodology

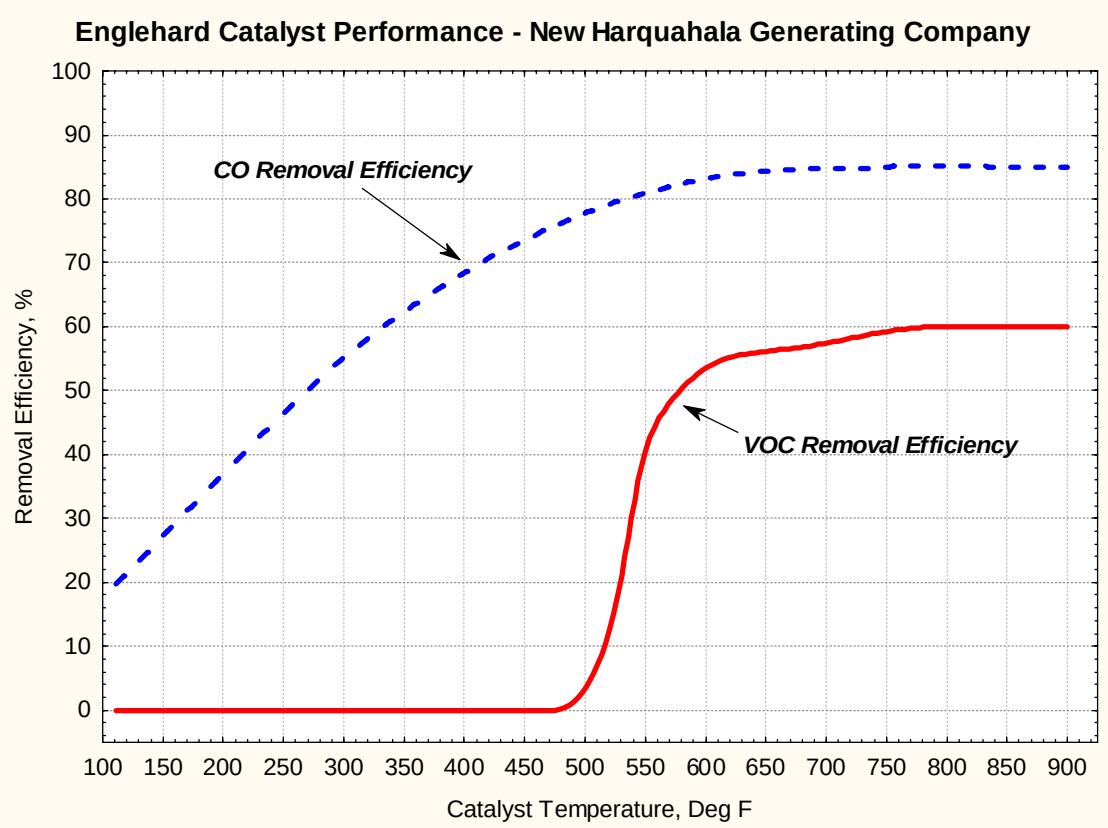
Requested Change:
NHGC requested the incorporation of a new VOC emissions calculation methodology into the permit. The new methodology is based on updated information from the combustion turbine vendor (Siemens) and oxidation catalyst vendor (Engelhard). A mathematical model was developed based on updated vendor information and the variables fuel flow and catalyst temperature. VOC emissions during startup, shutdown, and tuning/testing operating scenarios can be estimated more accurately using the model. VOC emissions during normal operation would be estimated using a conservative test data-derived emission factor.

Analysis
The original NHGC permit application was based on very preliminary emissions estimates from Siemens-Westinghouse Power Generation for their new 501G combustion turbines. The emissions values, especially for CO and VOC emissions, were very conservative due to the fact that these units had not been operated for sustained periods at other sites prior to the time the NHGC permit application was being developed.

501G/HRSG VOC emissions are a function of fuel flow as shown in the figure below, representing uncontrolled VOC emissions from startup to full load operation.



The NHGC combustion turbines/HRSGs are equipped with oxidation catalysts that reduce the amount of CO and VOC emissions. Engelhard, Inc supplies the catalyst. The removal efficiency of the catalyst as a function of catalyst temperature is illustrated in the figure below. Below 500° F, the removal efficiency for VOC is virtually zero, with a maximum removal efficiency of a nominal 60% for VOC.



Two (2) mathematical models were developed: (A) a model to compute the uncontrolled VOC emissions as a function of fuel flow, and (B) a model to compute the oxidation catalyst VOC removal efficiency as a function of catalyst temperature. Using both models, the "controlled" VOC emissions are computed as follows:

$$\text{VOC controlled} = \text{VOC (uncontrolled, A)} * \left(1 - \frac{\text{B}}{100}\right)$$

The calculation for VOC (uncontrolled) as a function of fuel flow, created using non-linear multiple regression, is shown in the table below.

A0	3094.926	B0	-35.6432	C0	89.13482
A1	-3.84947	B1	0.301360	NG	= Natural Gas Flow, KSCFH
A2	0.167581	B2	0.012542	NG2	= (NG/10)^2
A3	-0.245080	B3	-0.182930	NG3	= (NG/100)^3
A4	-272.680	B4	13.61226	INVNG	= (1000/NG)

VOC1 = A0 + A1*NG + A2*NG2 + A3*NG3 + A4*INVNG
VOC2 = B0 + B1*NG + B2*NG2 + B3*NG3 + B4*INVNG

If VOC1 < C0, then VOC (uncontrolled) = VOC1
If VOC1 >= C0, then VOC (uncontrolled) = VOC2

The calculation of VOC (uncontrolled) is in the units of lb/hr.

The calculation for the oxidation catalyst VOC removal efficiency (%) as a function of catalyst temperature (deg F), created using non-linear multiple regression, is shown in the table below

C0	-13222.42	D0	31680.84	E0	28.1667
C1	51.77139	D1	-68.84173	CTEMP	= Catalyst Temp, deg F
C2	-8.91299	D2	6.64747	CTEMP2	= (CTEMP/10)^2
C3	56.93445	D3	-24.00794	CTEMP3	= (CTEMP/100)^3
C4	12528.57613	D4	-54404.5396	INVCTEMP	= (100/CTEMP)

CTL1 = C0 + C1*CTEMP + C2*CTEMP2 + C3*CTEMP3 + C4*INVCTEMP
CTL2 = D0 + D1*CTEMP + D2*CTEMP2 + D3*CTEMP3 + D4*INVCTEMP

If CTL1 < E0, then CTLEFF = CTL1
If CTL1 >= E0, then CTLEFF = CTL2

The calculation of control efficiency (CTLEFF) is in the units of percent (%).

Therefore, the calculation of controlled VOC emissions, as a function of fuel flow and catalyst temperature, becomes:

VOC (controlled, lb/hr) = VOC (uncontrolled, lb/hr) * (1- (CTLEFF/100))

The use of these catalyst efficiency and VOC mass emission calculations can be used to more accurately estimate VOC emissions during startup and shutdown events. VOC emissions during startup and shutdown will be calculated in accordance with the above formulas. Once the combustion turbine/HRSG is in normal operation, the mass emission rate calculation will default to the emission factor approach currently employed. Based on stack test results and Vendor supplied emissions data, the recommended emission factor is 0.0012 lb VOC per million Btu (HHV basis). This factor represents the maximum emission rate value for all loads of 60% or greater. The normal operation VOC mass emission rate calculation is as follows:

VOC (controlled, lb/hr) = 0.0012 lb/million Btu * Heat input (million Btu/hr)

Conclusion

The proposed revision incorporates a more robust and accurate VOC estimation procedure based on current vendor information and operating experience with the Siemens-Westinghouse 501G combustion turbines. Permit conditions incorporating revised VOC emission calculation procedures are shown below.

MONITORING AND RECORDKEEPING REQUIREMENTS:

A. Monitoring and Recordkeeping Requirements for the Combined Cycle Units:

9) VOC emissions from the Combined Cycle Units during normal operating conditions shall be calculated using the emission factors contained in the Permit Application amended on March 28, 2006 and unit-specific fuel usage data, unless an alternative emission rate can be demonstrated to the satisfaction of the Control Officer and the Administrator to be more representative of emissions.

10) VOC emissions from the Combined Cycle Units during startup, shutdown, and testing/tuning operating conditions shall be calculated based on fuel flow and oxidation catalyst temperature in accordance with the mathematical model contained in the Permit Application amended on March 28, 2006, unless an alternative emission rate can be demonstrated to the satisfaction of the Control Officer and the Administrator to be more representative of emissions.

4.6 Startup/Shutdown (SU/SD) Definitions

Requested Change:

NHGC requested that the definitions of SU/SD operation (including cold and hot/warm SU/SD be revised to better comport with the operational capabilities of the NHGC combined cycle units. The current SU/SD definitions contain two criteria that unnecessarily prolong startups and restrict operation at lower load levels (i.e., 50% – 75% load).

Under the current permit, startup is not terminated until the exhaust gas temperature at the inlet to the oxidation catalyst system reaches 600º F, and both the startup and shutdown definitions contain a 75% electrical load criterion (i.e., startup does not end until the Unit reaches 75% of rated capacity and shutdown is initiated when the Unit falls below 75% of rated capacity. NHGC requested that the startup definition be revised to lower the load threshold to 50% and incorporate the Combined Cycle Unit control system digital signal "Final Mode" in place of oxidation catalyst inlet gas temperature. NHGC requested that the definition of shutdown be revised to also incorporate the control system digital signal "Final Mode," remove the 75% load criterion, and clarify qualification of unit 'trips' and aborted startups.

Analysis:

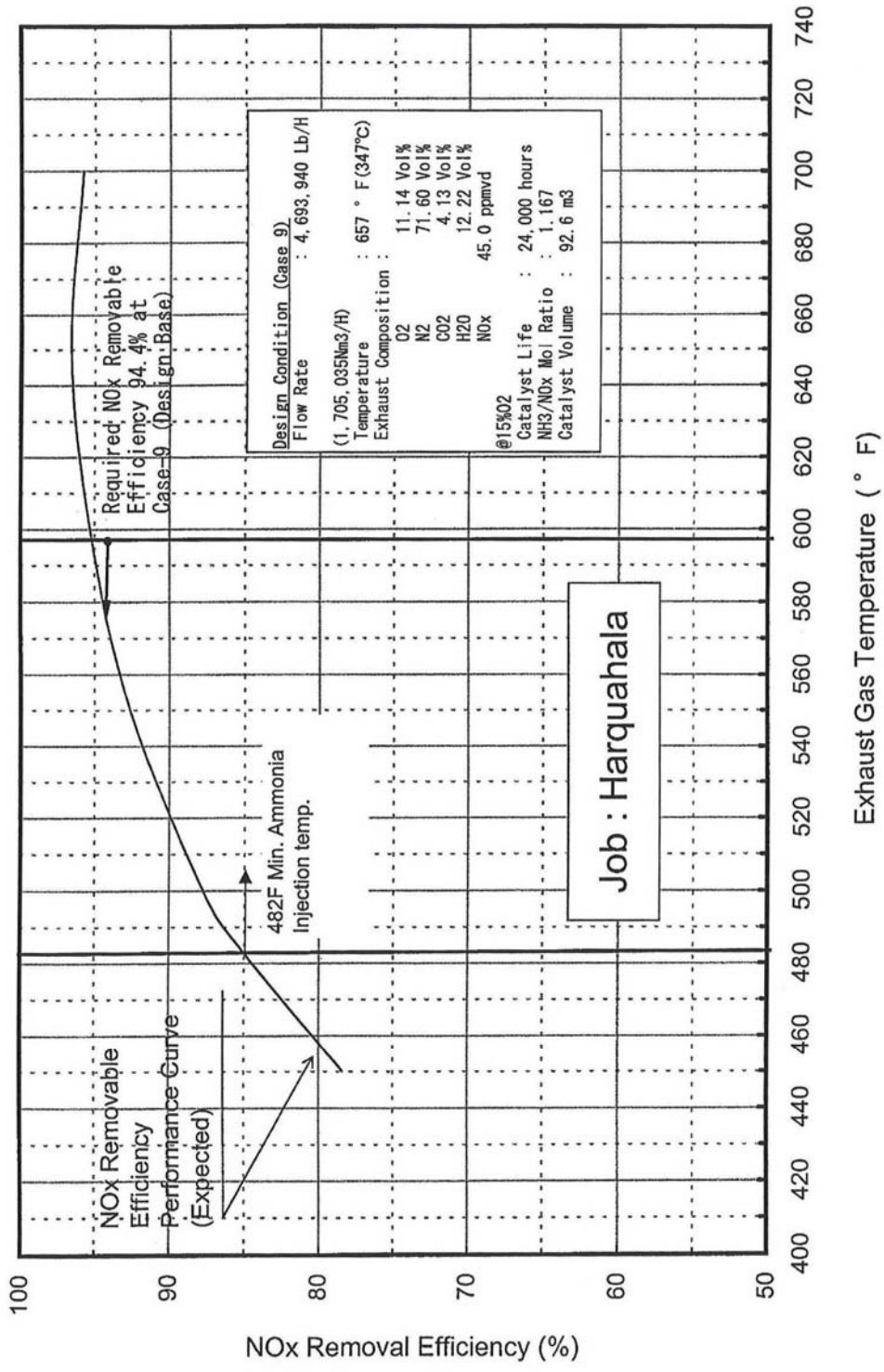
The current Title V permit startup and shutdown definitions (Conditions 18.c and 18.d) read as follows:

"Startup is defined as the period between when a Combined Cycle Unit is initially started until the temperature of the Combustion Turbine's exhaust prior to entering the Selective Catalytic Reduction system and prior to entering the Oxidation Catalyst system reaches 600 degrees Fahrenheit (316 degrees Centigrade) and the electrical load of the Combustion Turbine increases to 75% of rated capacity. Rated capacity means the combustion gas turbine's

nameplate capacity adjusted to current inlet conditions. Cold startup is defined when a startup occurs when the steam turbine rotor temperature is less than 302 degrees Fahrenheit (150 degrees Centigrade). Hot startup or warm startup is defined when a startup occurs when the steam turbine rotor temperature is 302 degrees Fahrenheit (150 degrees Centigrade) or greater."

"Shutdown is defined as the period during a shutdown sequence beginning when the electrical load of a Combustion Turbine drops below 75% of rated capacity and ending when combustion has ceased."

According to NHGC, these definitions were based on the conservative assumptions that (1) the units could not operate below 75% of rated capacity and still meet applicable 'normal operation' emission limits and (2) ammonia injection to the SCR could not begin until the catalyst temperature was at or above 600° F. While the rotor temperature definitions for cold and hot/warm startups remain valid, NHGC has the ability to initiate or maintain SCR operation at a lower load (i.e., less than 75%). The figure below illustrates the vendor SCR performance curve setting 482 °F as the minimum catalyst temperature for ammonia injection.


NOx Removal Efficiency (%)
100
90
80
70
60
50
Exhaust Gas Temperature (° F)
400
420
440
460
480
500
520
540
560
580
600
620
640
660
680
700
720
740
NOx Removable Efficiency Performance Curve (Expected)
Required NOx Removable Efficiency 94.4% at Case-9 (Design Base)
482F Min. Ammonia Injection temp.
Job : Harquahala
Design Condition (Case 9)
Flow Rate : 4,693,940 Lb/H
(1,705,035Nm3/H)
Temperature : 657 ° F(347°C)
Exhaust Composition :
O2 11.14 Vol%
N2 71.60 Vol%
CO2 4.13 Vol%
H2O 12.22 Vol%
NOx 45.0 ppmvd
@15%O2
Catalyst Life : 24,000 hours
NH3/NOx Mol Ratio : 1.167
Catalyst Volume : 92.6 m3

The use of the "Final Mode" operating signal to signify the end of startup and beginning of shutdown represents a more appropriate operating mode metric. According to Siemens emissions test data for the 501G Combustion Turbines, NHGC has the ability to operate in Final Mode between 50 and 75% of base load while meeting all permitted emissions limits. NHGC combined cycle Unit NOx and CO emissions are continuously monitored by CEMS, and historical operating data demonstrate that the units can operate between 50 and 75% load and still meet the applicable 'normal operation' concentration (ppmvd at 15% O_2), emission rate (lb/million Btu), and mass emission (lb/hr) limits. Based on vendor supplied data, VOC emissions are also expected to remain well within permitted emission limits at 50% - 75% load operation.

As shown in the table below, operation at lower minimum load will result in lower emissions. Therefore, allowing the combined cycle units to operate between 50% and 75% load to satisfy dispatch will result in lower mass emissions than requiring operation only at 75% load and higher.

OPERATION AT 75% LOAD OR GREATER

Hours per year per CT/HRSG	Ambient Temperature (deg F)	Load Condition (% CT Load)	Stack NOx (lb/hr)	NOx (TPY)
1500	36	BASE	24.2	18.18
500	36	90%	21.9	5.47
500	36	80%	20.1	5.01
0	36	70%	18.0	0.00
0	36	60%	16.0	0.00
0	36	50%	14.0	0.00
0.00	36	30%	209.2	0.00
0.00	36	20%	159.2	0.00
0.00	36	10%	134.6	0.00
0.00	36	FSNL	111.5	0.00
3500	59	BASE	22.7	39.69
1500	59	90%	20.4	15.34
1260	59	80%	18.8	11.86
0	59	70%	17.1	0.00
0	59	60%	15.3	0.00
0	59	50%	13.5	0.00
8760				**95.55**

OPERATION AT 50% LOAD OR GREATER

Hours per year per CT/HRSG	Ambient Temperature (deg F)	Load Condition (% CT Load)	Stack NOx (lb/hr)	NOx (TPY)
1500	36	BASE	24.2	18.18
500	36	90%	21.9	5.47
200	36	80%	20.1	2.01
200	36	70%	18.0	1.80
200	36	60%	16.0	1.60
100	36	50%	14.0	0.70
3500	59	BASE	22.7	39.69
1500	59	90%	20.4	15.34
560	59	80%	18.8	5.27
200	59	70%	17.1	1.71
200	59	60%	15.3	1.53
100	59	50%	13.5	0.68
8760				**93.98**

Conclusion:
NHGC provided sufficient supporting basis for revising the startup and shutdown operating condition definitions as requested. The definitions were revised substantially as requested, but with the addition of a maximum startup event duration limitation. The basis for this additional requirement is discussed in Section 4.7. The revised SU/SD definitions are as follows:

OPERATIONAL REQUIREMENTS:

B. Operational Requirements for Combined Cycle Units:

2) Startup, Shutdown, Testing and Tuning Operating Conditions

a) Startup is defined as the period between when a Combined Cycle Unit is initially started and fuel flow is indicated until Combustion Turbine generation increases above 50% of rated capacity and the fuel system confirms, via digital signal, "Final Mode" of operations has been established. Rated capacity means the combustion gas turbine's nameplate electrical power output capacity in megawatts (MW) adjusted to current inlet conditions. Cold startup is defined as a startup that occurs when the steam turbine rotor temperature is less than 302 degrees Fahrenheit (150 degrees Centigrade). Hot startup or warm startup is defined as a startup that occurs when the steam turbine rotor temperature is 302 degrees Fahrenheit (150 degrees Centigrade) or greater. For the purpose of emission limit applicability, the total duration of any Combined Cycle Unit startup event (cold, hot or warm startup) shall not exceed 5 hours, except that the Permittee is allowed up to 3 startup events per calendar year lasting longer than 5 hours but not to exceed 8 hours. Restart of a Combined Cycle Unit following a unit trip or aborted startup constitutes a new startup period.

b) Shutdown is defined as the period during a Combined Cycle Unit shutdown sequence beginning when the operator initiates the shutdown of the unit and the fuel system confirms, via digital signal, that the units is no longer operating in Final Mode operations and ending when all combustion has ceased. In the event of a unit trip or aborted startup, shutdown begins when the combustion turbine drops off Final Mode operations and ends when all combustion has ceased. Restart of a Combined Cycle Unit following a unit trip or aborted startup constitutes a new startup period.

4.7 Removal of Startup Event Limits and Annual SU/SD Hours Limitations

Requested Change:
NHGC requested removal of the pound/event startup limitations and limitations on hours of operation in SU/SD mode (10 hours per calendar day and 700 hours per year per combined cycle unit) contained in the current permit. In summary, the bases and justification for this request were as follows:

- Removal of lb/event SU/SD emissions limitations in favor of lb/hour and ton/yr limits only was requested to reduce monitoring/recordkeeping burden and meet MCAQD objectives for enhanced enforceability and consistency among combined cycle plant permits within the County.
- Electrical market projections relied upon in developing the initial NHGC permit application and estimated total SU/SD events per year are inconsistent with the current

demand. The annual limit on hours of operation in startup/shutdown mode constrains NHGC's ability to operate as necessary to meet market demand.

- Current pound-per-hour and ton-per-year BACT limitations will remain unchanged and are not jeopardized by removal of the SU/SD hours limitations. Compliance with these limitations is demonstrated by CEMS (NOx and CO) or emissions model calculations (VOC) on an hourly and 365-day rolling total (NOx and CO) or 12-month rolling total (VOC) basis.
- The technology and work practices used on the NHGC combined cycle units – SCR and oxidation catalyst control systems and good engineering practices, constitute BACT for SU/SD operations.

Analysis:

Lb/event SU/SD limits - Table 4 of the current Title V permit contains NOx, CO, and VOC emissions limitations in units of pounds per SU/SD event. These limitations are in addition lb/hr limitations for specific SU/SD scenarios and ton/year limitations applicable to all operating scenarios. A review of County combined cycle plant Title V permits revealed inconsistency in the expression of SU/SD limitations. MCAQD objectives are to harmonize all combined cycle plant permit SU/SD limitations to a lb/hr basis and remove lb/event limitations where currently imposed, unless otherwise required to meet regulatory requirements and/or support air quality impact demonstrations. In the case of NHGC, only the CO lb/event limit is integral to the ambient air quality impact demonstration. MCAQD determined that the 3,000 lb CO/event limitation was necessary to support the CO NAAQS demonstration for the 8-hour averaging period. As discussed in further detail in Section 20 of this TSD, maximum 8-hour average CO emissions used in the most recent SU/SD scenario NAAQS modeling demonstration relied upon the 3,000 lb CO/event limit. Removal of this requirement would result in an increase in theoretical (allowable) emissions over an 8-hour period, potentially invalidating the prior modeling demonstration. Therefore, the CO lb/event limitation was maintained in Section 18.A, Table 3 of the revised draft permit.

The revised permit incorporates a new SU event duration limit consistent with good engineering practices (GEP) and demonstrated NHGC combined cycle unit performance. The following language was added to Condition 19.B(2)(a): "*For the purpose of emission limit applicability, the total duration of any Combined Cycle Unit startup event (cold, hot or warm startup) shall not exceed 5 hours, except that the Permittee is allowed up to 3 startup events per calendar year lasting longer than 5 hours but not to exceed 8 hours.*" NHGC provided actual operating data for cold and hot/warm SU events supporting these startup duration limits as representative of GEP and demonstrated capability. It should be noted that actual startup durations are less than the allowed 5 hours; however, in accordance with MCAQD policy, operating mode and associated compliance monitoring is performed on a clock hour basis (i.e., each clock hour is designated in one operating mode). The 5-hour SU event duration is necessary to accommodate normal GEP startups based on NHGC combined cycle unit operating history and the clock hour monitoring approach used.

No changes to the lb/hr SU/SD emission limits or ton/yr emission limits applicable to all operating scenarios were made. However, for improved compliance assurance and enforceability, the ton/yr limits for NOx and CO were revised from a 12-month rolling total basis to a 365-day rolling total basis.

SU/SD hours limitations - Condition 19.B of the current Title V permit contains the following SU/SD operational requirements:

B. Operational Requirements for the Combined Cycle Units:

"Each Combined Cycle Unit shall operate such that the total combined hours in both the startup and shutdown modes for each unit does not exceed 700 hours per year, calculated on a rolling 12 calendar month basis, and 10 hours per calendar day. For purposes of this Permit Condition, startup and shutdown are as defined in Notes (c) and (d) after Table 5 in Permit Condition 18.A.2."

MCAQD was unable to identify the regulatory basis for the current 10-hour per calendar day SU/SD limitation for each combined cycle unit. Applicable averaging times for the National Ambient Air Quality Standards (NAAQS) for pollutants affected by SU/SD operations (i.e., NOx and CO) are 1-hour and 8-hour (CO) and annual (NOx). Therefore, the 10-hour/day SU/SD limitation serves no purpose with respect to protection of the NAAQS. Significant operational and economic incentives already exist to limit startup frequency and duration to the greatest extent possible while still meeting electrical demand and maintaining safe/reliable operation of the combined cycle units. Robust monitoring systems are in place to ensure compliance with BACT limitations, including ton/yr limitations which apply to all operating conditions including SU/SD. Therefore, the 10-hour/day SU/SD limitation per combined cycle unit is unnecessary.

Annual SU/SD hours limitations contained in the current permit (700 hours/yr/combined cycle unit) are based on Company representations made by during original permitting of NHGC in 2000. Anticipated maximum annual hours of SU/SD reflected forecasted electrical market conditions at that time. The current electrical market requires more frequent startups and shutdowns then originally anticipated. The hour/yr SU/SD limitations now potentially constrain NHGC's ability to operate the combined cycle units as necessary to meet market demand. Rather than raise or reapportion the annual SU/SD hours allowance as initially requested by NHGC, MCAQD determined such limitations were unnecessary and could be removed from the permit without jeopardizing BACT compliance. This conclusion was based on the following factors:

1. Annual SU/SD duration limitations are not necessary to ensure and demonstrate compliance with the applicable ton/yr BACT limitations for NOx, CO, and VOC, which will remain unchanged. These annual emission limitations apply regardless of operating mode or total duration of startups and shutdowns. Compliance with ton/yr BACT limitations is determined using CEMS for NOx and CO (365-day rolling total) and test data-derived emission factor/model for VOC (12-month rolling total). Missing data procedures are specified to ensure complete accounting of emissions even during periods of monitor downtime.
2. The total duration of SU/SD operation per year is a factor of electrical market demand over which NHGC does not have direct control. The County determined that it was not appropriate to limit the total number or duration of SU/SD events per year as a component of BACT. Rather, a limit on the maximum duration of any SU/SD event was applied as an operational work practice under BACT. This approach is supported by a recent EPA permitting action for a combined cycle power plant in Washington.[3]
3. As documented below, the annual SU/SD duration limitations do not limit annual emissions below allowable annual ton/yr rates. The ton/yr BACT emission limits are more restrictive; therefore, the permit action does not constitute a 'change in the method of

[3] See Preliminary Technical Support Document for Diamond Wanapa I, L.P. Wanapa Energy Center; prepared by USEPA Region 10, Seattle, WA; 11/17/2004.

operation' that will 'result in' an increase in emissions (i.e., a modification in the context of NSR/PSD).

4. MCAQD required NHGC to prepare an updated BACT analysis for SU/SD operation of the combined cycle units to support the proposed permit revision. The results if that analysis, documented below, indicate that the emission limits and work practice standards contained in the revised permit constitute BACT for SU/SD operation.

Demonstration of no increase in emissions – Actual emissions under various operating modes, including cold, hot/warm SU and normal operation at full load, were evaluated based on conceptual annual operating scenarios to ensure that the removal of the annual hours of SU/SD limitations would not result in an increase in emissions. The table below summarizes annual emissions for various startup scenarios in comparison to the annual emission limits per unit. The NHGC annual emissions totals found in the original permitting for the facility were based on emissions scenarios using 10 cold startups, and 30 hot/warm startups. The resulting annual emissions were considered BACT for the Siemens 501G combustion turbines equipped with SCR and oxidation catalysts. Assuming 700 startup hours per unit as allowed by the current Title V permit and base-load operation for the remainder of the year, emissions would exceed the allowable annual NOx, CO, and VOC limits contained in the permit. Therefore, it was concluded that the annual SU/SD duration limits do not constrain or otherwise 'bottleneck' annual emissions to some level below allowable ton/yr rates.

# Cold Startups per Year	**# Hot/Warm Startups per Year**	**Operating Hours at 100% Load, 59 deg F**	**NO_x (tpy)**	**CO (tpy)**	**VOC (tpy)**
Current Annual Limits per Unit			***108***	***192***	***34***
0	0	8760	99.3	39.7	6.3
10	30	8600	107.8	86.2	21.7
30	100	8240	**126.7**	191.0	**56.1**
100	100	7960	**141.5**	**272.4**	**82.9**
100	200	7560	**162.5**	**388.8**	**121.3**

BACT Analysis - To support the proposed changes to SU/SD related permit conditions, MCAQD required that NHGC prepare an updated BACT analysis for the combined cycle units. Per agreement with USEPA Region 9, the analysis was limited to SU/SD operating conditions and did not include normal operation. The combined cycle unit SU/SD BACT analysis, performed in accordance with the EPA prescribed 'top-down' process, is documented below.

Step 1 – Identify all Control Options

The following technologies were identified as potentially available for controlling startup/shutdown emissions from the NHGC combustion turbines. Available technologies are listed in order from most to least effective (i.e., top down).

- Catalytic Control with Good Engineering Practices
    - Selective Catalytic Reduction for Nitrogen Oxides (NOx)

    - Oxidation Catalyst Control for Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)
- Pre-heater (to reduce startup duration)
- Good Engineering Practices

Each of these control methodologies is discussed separately below.

Catalytic Control with Good Engineering Practices – Uncontrolled emissions from a Siemens 501G with Heat Recovery Steam Generator (HRSG) combustion turbine follow a profile related to fuel flow, load, and temperature. During a startup, emissions increase, and then drastically decrease, as the unit ramps up to normal operating loads. During a startup, emissions are elevated as the combustion controls make adjustments for additional fuel firing while the unit proceeds to Final Mode operating conditions in the normal operating range of the unit. The NHGC combined cycle units reach Final Mode operating conditions at 50 to 100% operating range.

To further control emissions during startups, NHGC utilizes oxidation catalyst control for both carbon monoxide and volatile organic compounds (CO, VOC), plus selective catalytic reduction (SCR) for post-combustion control of nitrogen oxides (NOx). Oxidation catalyst efficiency is a function of catalyst temperature during startup, which is a directly related to combustion turbine exhaust gas temperature. The production of hot exhaust gas is controlled by the combustion dynamics of the turbine startup process and regulated by the process control system to ensure a safe and reliable startup. Below 500 degrees F, the post combustion removal efficiency for VOC is virtually zero, compared to the maximum removal efficiency of approximately 60%. CO removal efficiency is relatively higher than VOC during startup, but still well below the optimal/maximum control efficiency afforded by the catalytic oxidation systems during Final Mode operation.

The NHGC combined cycle units are equipped with SCR systems for post-combustion NOx emissions control. The SCR systems are designed not to inject ammonia until the temperature at the SCR catalyst is above 482 deg F. The current NHGC permit requires that the SCR be used when the catalyst temperature reaches 600 deg F, whereas the March 28, 2006 permit modification request includes an adjustment to allow for SCR activation at a lower catalyst temperature to minimize startup emissions.

Good Engineering Practice (GEP) relates to combined cycle unit operation and combustion control during startup/shutdown conditions designed to minimize such periods of elevated emissions to the extent possible within operational and safety constraints. Reaching Final Mode operation quickly, where the combustion controls are optimized for low emissions and catalyst temperatures are in the range necessary for optimal control, is the most effected work practice for minimizing emissions.

Pre-Heaters – In EPA Region IX, a few projects in the South Coast Air Quality Management District (SCAQMD) proposed the use pre-heaters (i.e., auxiliary boiler) to reduce NOx emissions during start-up, but all these facilities modified their permit requests to eliminate the use of pre-heaters prior to construction. The three facilities identified were the Magnolia Power Plant, the El Segundo Repower Project, and the Mountainview Power Project. The Magnolia Power Project and the Mountainview Power project have been constructed and both facilities were subject to review and approval by EPA Region IX without the need for additional emissions controls during SU/SD, beyond the use of a CO and NOx catalyst system. It should

be noted that the addition of a pre-heater at NHGC would not be consistent with BACT, since the requirement would result in an overall increase in plant emissions.

Some combined cycle facilities at cogeneration plants utilize auxiliary boilers to supply steam to other facilities when the combustion turbines/HRSG are off line. The auxiliary boilers can also divert steam to the CT/HRSG to maintain higher temperatures in the HRSG, resulting in quicker startup times. In the case of NHGC, an auxiliary boiler would help to reduce startup times, and consequently startup emissions from the CT/HRSG, but it would result in the need for an additional emission source resulting in a net increase in plant emissions. The installation of a new major emissions source (not currently permitted) to minimize CT/HRSG emissions during startup would not be environmentally beneficial.

Good Engineering Practices – Many combined cycle facilities simply use SCR or steam injection for NOx control, with only GEP for control of CO and VOC emissions, i.e., no oxidation catalyst. The general concept of GEP was described above. NHGC already utilizes good engineering practices to minimize SU/SD emissions. NHGC also performs maintenance as suggested by manufacturer's recommendations and utilizes an onsite manufacturer's representative, when necessary, to oversee major plant maintenance activities and control enhancements.

Step 2 – Eliminate Technically Infeasible Control Options
Each of the identified control technologies is technically feasible.

Step 3 – Characterize Control Effectiveness of Technically Feasible Control Options
The top-ranked control option, GEP combined with catalytic oxidation and SCR was determined to constitute BACT during the initial HGP PSD permitting. This combination of work practice and control technology is capable of achieving the SU/SD emission rate limitations, including lb/hr and ton/yr limits, contained in Condition 18.A Tables 1 and 3 of the revised permit.

The second-ranked control option, involving the use of pre-heaters, could potentially lower emissions from the combined cycle units during startup if used in conjunction with the top ranked alternative; however, due to adverse environmental, energy and economic factors described in Step 4 below, the use of pre-heaters was not considered BACT. It is not relevant to discuss the use of GEP alone without add-on controls because the NHGC combined cycle units are already equipped with catalytic oxidation systems and SCR.

Step 4 – Evaluate More Effective Control Options
The top-ranked control option, GEP combined with catalytic oxidation and SCR was initially determined to be BACT for SU/SD operation of the NHGC combined cycle units. This control combination continues to represent best demonstrated industry performance for the source category. Energy, environmental, and economic impacts have been found to be acceptable in a large number of BACT determinations, including the initial NHGC permit.

In support of GEP to reduce startup time and emissions, Siemens engineers and NHGC developed new control logic for the HRSG high pressure steam controller that increased steam pressure faster than earlier designs. The increase in steam pressure elevated the exhaust gas temperature from the combustion turbine, thereby improving the rate at which the catalysts reach their minimum operating temperatures. This in conjunction with the beginning ammonia injection at a lower catalyst temperature results in reduced startup times and emissions.

Both the SCR and oxidation catalysts have been optimized and sized to fit in the HRSG of each unit. There is very limited space, and the addition of extra catalyst volume would have relatively insignificant effects. As discussed earlier, the effectiveness of the oxidation catalyst is driven by exhaust gas temperature, and additional catalyst would only serve to increase backpressure, requiring increased fuel combustion resulting in a reduction in plant efficiency (i.e., more emissions per megawatt of plant output).

Injecting ammonia for the SCR at the initiation of a startup would not be effective in reducing SU/SD emissions, since the catalytic reduction of NOx emissions occurs in a specific temperature range. Injecting ammonia at too low of a temperature (below the manufacturer's minimum recommended 482 deg F) would only serve to increase ammonia slip, and increase emissions of condensable particulate matter.

The second-ranked control option, involving the use of pre-heaters, would result in significant adverse environmental, energy and economic impacts. New emissions unit(s), e.g., heaters/boilers would have to be installed at the site, significantly increasing overall facility combustion-related emissions and energy use and involving prohibitive cost. MCAQD concluded that a detailed quantitative analysis of these adverse impacts was not warranted because it is not aware of any sources that have been required to install pre-heaters for the purpose of SU/SD BACT.

Step 5 – Establish BACT

The combination of oxidation catalysts for control of CO and VOC, SCR for NOx control, and GEP represents current BACT for startup/shutdowns and normal operation of combined cycle power plants. NHGC already employs this combination of work practice and control technology. The NOx, CO, and VOC emissions limitations applicable for SU/SD events contained in the revised draft permit (lb/hour and ton/yr, no change from current permit) in conjunction with revised SU/SD definitions were determined to be BACT for the NHGC combined cycle units in SU/SD and testing/tuning operating modes.

Ambient Impacts – Prior demonstrations of compliance with the National Ambient Air Quality Standards (NAAQS) were reviewed to confirm that the revised SU/SD-related permit conditions did not invalidate conclusions or necessitate further dispersion modeling demonstration(s). The initial HGP ambient air quality impact demonstration was contained in the original 2000 PSD permit application. This demonstration was updated as part of the March 26, 2003 minor permit modification including an increase in the allowable lb/hour and lb/event rate for CO emissions during startup. The 2003 demonstration focused specifically on CO emissions (1/hour and 8-hour averaging periods).

The pollutants affected by SU/SD and tuning/testing operating modes include NOx, CO, and VOC, each of which is subject to applicable BACT requirements. Of these pollutants, only NOx and CO were required to be evaluated for NAAQS compliance (i.e., in accordance with MCAQD modeling guidelines, no ozone modeling demonstration was required as part of initial permitting). The averaging period for the NOx NAAQS is annual. Allowable annual NOx emissions from the combined cycle units remain unchanged in the revised permit. Therefore, the permit revisions will not impact compliance status and the prior demonstration (indicating impacts below the PSD significant impact level [SIL]) remains valid.

Applicable averaging periods for the CO NAAQS are 1-hour and 8-hour. The revised permit will not affect the applicable lb/hr CO limit for SU/SD operation; therefore, the existing 2003 modeling demonstration indicating impacts below the PSD SIL remains valid. Removal of the

lb/event CO limitation would theoretically increase potential 8-hour average CO emissions from the combined cycle units. Therefore, MCAQD elected to retain the lb/event limitation for CO emissions that was integral to the 2003 CO modeling demonstration for the 8-hour NAAQS (also indicating impacts below the PSD SIL). Air quality impact demonstrations and conclusions for NHGC are discussed in further detail in Section 20 of this TSD.

Conclusion:
Based on the foregoing analysis, MCAQD concluded that the proposed removal of annual SU/SD hour limitations for the combined cycle units and SU/SD event limitations (with the exception of CO) were justified and approvable. The existing lb/hr limitations for SU/SD will remain unchanged as well the ton/year limitations applicable to all operating scenarios. Current controls and work practices continue to meet BACT for SU/SD operation of the combined cycle units. Robust monitoring systems including CEMS for NOx and CO are in place to ensure compliance with concentration-based, lb/hr, and ton/yr BACT limitations.

The following changes were made to the permit SU/SD related requirements (except as noted, references refer to existing permit structure):

- Condition 18.A, Table 4 containing lb/event SU/SD limitations was removed;
- Condition 18.A, Table 1 (and associated conditions) were revised to identify the increased roll frequency for NOx and CO ton/yr limitations (i.e., a 365-day rolling total vs. 12-month rolling total);
- Condition 18.A, Table 3 was revised to incorporate the lb/event limitations for CO only previously contained in Table 4;
- The 700 hr/yr and 10 hr/calendar day SU/SD operational limits per combined cycle unit contained in Condition 19.B were removed;
- The definition of startup (Condition 19.B(2)(a) of the revised permit) was revised to incorporate a 5-hour maximum event duration (with noted exception);
- A new condition was added to Section 19.B requiring development of and conformance with a startup and shutdown plan for the combined cycle units and associated pollution control systems;
- The requirements to calculate monthly 12-month total hours of operation in each mode for each combined cycle unit contained in Condition 20.A was removed;
- Monitoring and recordkeeping requirements were revised to incorporate the missing data substitution procedures from 40 CFR Part 75 (NOx and CO); and
- Monitoring requirements were expanded to address monitoring and mass emission rate calculations procedures (based on 40 CFR Part 75) is greater detail, including the use of missing data substitution procedures from 40 CFR 75 Subpart D and Appendix C.

4.8 Increase in Allowable Cooling Water Total Dissolved Solids

Requested Change:
NHGC requested an increase in the allowable total dissolved solids (TDS) content of cooling tower recirculation water from 11,000 to 20,000 ppm. The reason for the request is water conservation. Increasing the allowable TDS concentration to 20,000 ppm will result in a significant reduction in annual water consumption in the cooling towers.

Analysis:
The NHGC cooling tower drift eliminator performance of 0.0003% is among the lowest currently reported BACT levels for the source category, demonstrating a superior level of drift

control in comparison to other facilities within the County and nationally. It is arguable whether the regulation of cooling water TDS as part of BACT is authorized or appropriate. However, given the existing limitation and correlation between TDS and PM10 emissions, MCAQD evaluated to the proposed change to ensure conformance with BACT and compliance with the existing ton/yr PM10 limit from the cooling towers.

Based on MCAQD guidance, NHCG updated the cooling tower PM10 emissions calculations to incorporate more recent and representative droplet size distribution data for high-efficiency drift eliminator controlled cooling towers.[4] As document in the calculation below, at 20,000 ppm TDS (mg/L TDS), the annual mass emissions per tower are 0.411 ton/year, for a plant total of 0.821 ton/year. This emission rate is well below the permitted allowable rate of 3.1 tons/yr per cooling tower and the rates modeled for NAAQS compliance demonstration.

Cooling Tower Emission Calculation

Cooling Tower Design Data				
Number of Cells per Tower		9		
Number of Towers		2		
Circulation Water Flow (per tower)	gpm	135,000		
TDS in Cooling Tower	mg/L	20,000		
Drift Emissions Factor	%	0.0003		
PM Emissions (per tower)	lb/hr	4.056		
PM Emissions (per cell)	lb/hr	0.451		
PM10 Emissions (per tower)	lb/hr	0.094		
PM10 Emissions (per cell)	lb/hr	0.010		
Operating Hours		8,760		
Annual PM-10 Emissions (per tower)	tons	0.411	per year	
Annual PM-10 Emissions (all towers)	tons	0.821	per year	
Exit Temperature	deg F	96		
Exit Diameter	ft	33.3		
Exit Height	ft	47		
Exit Flow Rate (per cell)	acfm	995,977	5.82	m/sec
			19.1	ft/sec

Notes: Drift emissions factor is percent of total circulation water flow
TDS - Total Dissolved Solids
PM - Total Particulate Matter PM10 = Particulates < 10 microns

Calculation (maximum condition):

Drift Rate per Tower

$$\frac{1.35E+05 \text{ gal water}}{1 \text{ min}} \times \frac{8.345 \text{ lb}}{1 \text{ gal water}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times 0.0003\% \text{ (drift)} = \frac{203 \text{ lb water}}{\text{hr}}$$

PM Emissions per Tower

$$\frac{203 \text{ lb water}}{1 \text{ hr}} \times \frac{20{,}000 \text{ lb PM}}{1E+6 \text{ lb water}} = \frac{4.056 \text{ lb PM}}{\text{hr}} = \frac{17.76 \text{ ton PM}}{\text{yr}}$$

PM10 Emissions per Tower

$$\frac{4.06 \text{ lb}}{\text{hr}} \times \frac{0.023 \text{ lb PM10*}}{\text{lb PM}} = \mathbf{\frac{0.094 \text{ lb PM10}}{\text{hr - tower}}} = \mathbf{\frac{0.411 \text{ ton PM10}}{\text{yr - tower}}}$$

* See size fraction calculation below

PM10 Emissions per Cell

$$\frac{0.09 \text{ lb PM10}}{\text{hr - tower}} \times \frac{1 \text{ tower}}{9 \text{ cells}} = \frac{0.0104 \text{ lb}}{\text{hr - cell}} = \frac{0.00131 \text{ g}}{\text{sec - cell}}$$

PM10 Multiplier Calculation

			Reference
water TDS	20,000	ppm	Upper estimate
calcium carbonate density	2.7	g/cc	Perry's Chemical Engineer's Handbook, Sixth Edition, p. 3-10.
volume of a sphere	V = 4/3*PI*r3		

[4] Updated cooling tower PM-10 emissions calculations incorporate water droplet size distribution data from EPRI test data reported in the following reference: Joel Reisman and Gordon Frisbie: "Calculating Realistic PM10 Emissions from Cooling Towers" Greystone Environmental Consultants, Inc., Sacramento, CA.

Water Drop Size Distribution*

Droplet Dia. (micron)	% mass	% mass smaller	Water Droplet Vol. (cc)	Water Droplet Mass (g)	Solids Mass (g)	Solids Vol. (cc)	Solids Dia. (micron)	% mass <10 microns
10	0.00	0	5.2E-10	5.2E-10	1.0E-11	3.9E-12	1.9	
20	0.20	0.196	4.2E-09	4.2E-09	8.4E-11	3.1E-11	3.9	
30	0.03	0.226	1.4E-08	1.4E-08	2.8E-10	1.0E-10	5.8	
40	0.29	0.514	3.4E-08	3.4E-08	6.7E-10	2.5E-10	7.8	
50	1.29	1.806	6.5E-08	6.5E-08	1.3E-09	4.8E-10	9.7	
60	3.90	5.702	1.1E-07	1.1E-07	2.3E-09	8.4E-10	11.7	2.31
70	15.65	21.348	1.8E-07	1.8E-07	3.6E-09	1.3E-09	13.6	
90	28.46	49.812	3.8E-07	3.8E-07	7.6E-09	2.8E-09	17.5	
110	20.70	70.509	7.0E-07	7.0E-07	1.4E-08	5.2E-09	21.4	
130	11.51	82.023	1.2E-06	1.2E-06	2.3E-08	8.5E-09	25.3	
150	5.99	88.012	1.8E-06	1.8E-06	3.5E-08	1.3E-08	29.2	
180	3.02	91.032	3.1E-06	3.1E-06	6.1E-08	2.3E-08	35.1	
210	1.44	92.468	4.8E-06	4.8E-06	9.7E-08	3.6E-08	40.9	
240	1.62	94.091	7.2E-06	7.2E-06	1.4E-07	5.4E-08	46.8	
270	0.60	94.689	1.0E-05	1.0E-05	2.1E-07	7.6E-08	52.6	
300	1.60	96.288	1.4E-05	1.4E-05	2.8E-07	1.0E-07	58.5	
350	0.72	97.011	2.2E-05	2.2E-05	4.5E-07	1.7E-07	68.2	
400	1.33	98.34	3.4E-05	3.4E-05	6.7E-07	2.5E-07	78.0	
450	0.73	99.071	4.8E-05	4.8E-05	9.5E-07	3.5E-07	87.7	
500	0.00	99.071	6.5E-05	6.5E-05	1.3E-06	4.8E-07	97.5	
600	0.93	100	1.1E-04	1.1E-04	2.3E-06	8.4E-07	117.0	
Total	100.0							

PM10/PM multiplier = 0.023

* Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999

The derivation of the revised cooling tower conversion factor using the particle size multiplier from above and assuming 8760 operating hours/year of cooling tower operation is:

$$\text{Conversion Factor} = 60\frac{\text{min}}{\text{hr}} \times 8760\frac{\text{hr}}{\text{yr}} \times 3.785\frac{\text{L}}{\text{gal}} \times 2.2046\times10^{-6}\frac{\text{lb}}{\text{mg}} \times 0.000003\left(\begin{matrix}\text{Drift}\\ \text{Factor}\end{matrix}\right)$$

$$\times 0.023\left(\text{PM/PM10 Multiplier}\right) \times \frac{1\,\text{ton}}{2000\,\text{lb}}$$

$$= 1.513\times10^{-10}\left(\frac{\text{min}\bullet\text{L}\bullet\text{ton}}{\text{gal}\bullet\text{mg}\bullet\text{yr}}\right)$$

4.9 Additional Permit Revisions

In addition to the revisions requested by NHGC reviewed above, MCAQD made several changes to permit conditions to 1) correct errors, 2) incorporate newly applicable or revised regualatory requirements, 3) generally improve language to better or more completely incorporate/cite regulatory requirements, 4) streamline requirements where appropriate, and 5) meet MCAQD obejectives for consistency between County combined cycle power plant permits. Permit revisions initiated by MCAQD are summarized in the table below:

Change	Basis
GENERAL PERMIT CONDITIONS	
Entire section updated.	General Permit Conditions were updated based on the current MCAQD template.
SPECIFIC PERMIT CONDITIONS	
18. ALLOWABLE EMISSION LIMITS	
Section 18 was reorganized. Table 'notes' were moved to appropriate permit Sections, e.g., Section 19: Operational Requirements or Section 20: Monitoring and Recordkeeping.	Many essential permit provisions were contained in notes to Section 18 emission limit tables. This format was inappropriate and confusing. Table note provisions were moved to appropriate sections of the permit. Section 18 was organized to clearly present emission limitations for each category of equipment, i.e., combined cycle units, cooling towers, firewater pump engine and emergency generator, and generally applicable limits.
Emission limit expression and averaging times were clarified.	Where missing or incorrect, emission limit expression and applicable averaging times were specified in Tables 1 through 5.
NOx and CO ton/year limitations revised from rolling 12-month total to rolling 365-day total basis.	This change was made in conjunction with SU/SD condition-related permit revisions requested by NHGC. The revision serves to enhance the enforceability of annual (ton/yr) emission limits applicable to all operating modes, including SU/SD. See Section 4.7 of this TSD for further discussion.
Opacity requirements were revised to more accurately reflect County Rule 300 and 324 requirements.	Existing permit language was not directly consistent with the underlying regulations. Language was revised accordingly.
Federal BACT regulatory citation [40 CFR 52.21(j)] added to BACT conditions	The MCAQD PSD program is delegated, therefore, both the requirements of County Rule 240 §380 and 40 CFR 52.21 are applicable.
Citation: ARS §49-106, State Rule R18-2-719.C.1 (R9-3-519.C.1) was removed from the fuel burning equipment PM limit applicable to the firewater pump engine and emergency generator.	SIP Rule 31.H.1.a is applicable and specifies the same equation-based limit. Reference to the State rule is unnecessary and redundant.
Several other minor corrections were made to regulatory citations.	N/A
19. OPERATIONAL REQUIREMENTS	
Section 19 was reorganized to incorporate operational requirements previously contained in Section 18 table notes. Operational requirements for CEMS (existing permit Condition 19.G) were moved to Section 20: Monitoring and Recordkeeping.	Permit provisions were organized under most appropriate headings.
The fuel restriction permit condition (Condition 19.A.1 of current permit and 19.B.1 of revised permit) was revised to incorporate a 0.005 gr/dscf sulfur restriction on natural gas calculated	Limit is required to ensure PSD-minor status for sulfuric acid mist emissions. See Section 9.2.2 of this TSD.

Change	Basis
on a 12-month rolling average.	
The general operational requirements of 40 CFR 60.11(d) were incorporated in new condition 19.B.3.	The requirements of 40 CFR 60.11(d) are applicable to the combined cycle units as NSPS Subpart GG affected facilities.
New condition 19.B.4 was added requiring the development and maintenance of a startup and shutdown plan for the combined cycle units and associated pollution control systems.	This change was made in conjunction with SU/SD condition-related permit revisions requested by NHGC. The revision serves to enhance the enforceability of BACT work practices during SU/SD operating conditions.
SCR and oxidation catalyst system O&M plans were incorporated in Appendix D of the revised permit and referenced as such in corresponding Section 19 permit conditions.	The O&M plans are being made enforceable under the revised permit while facilitating potential plan revision without requiring permit reopening.
Condition 19.F was revised to incorporate a 500 hour/yr limitation on operation of the firewater pump engine and emergency generator.	The previous permit did not contain any specific annual operating limitation. The 500 hour/yr limit is consistent EPA guidance on limiting potential to emit from emergency use IC engines.
Several corrections were made to regulatory citations.	N/A
20. MONITORING AND RECORDKEEPING REQUIREMENTS	
Monitoring requirements previously contained in Condition 19.G: Operational Requirements for CEMS were incorporated into Section 20.	CEMS requirements more appropriately belong under Monitoring and Recordkeeping vs. Operational Requirements.
Permit conditions specifying CEMS requirements were added/revised to more accurately and completely reference the requirements of 40 CFR 60 and 40 CFR 75, as applicable.	Under the streamlined NOx monitoring provisions, the NOx and diluent CEMS must meet the requirements of 40 CFR 75, except as noted. CEMS meeting the requirements 40 CFR 60.13 and Appendices B & F of 40 CFR Part 60 are used to demonstrate compliance with CO BACT limitations.
The missing data substitution procedures of 40 CFR 75 Subpart D were incorporated for NOx and CO monitoring.	The 40 CFR Part 75 missing data substitution procedures provide a consistent and technically justified means of accounting for emissions during periods of monitoring system downtime or unreliability. This approach will enhance compliance demonstration with ton/year BACT emissions limitations. The permit also provides the option of assuming emissions equal applicable lb/hr permit limitations.
Mass emission rate calculation procedures for NOx, CO, and SO_2 were incorporated based on the provisions of 40 CFR Part 75.	Explicit mass emission rate calculation procedures were incorporated into the revised permit to avoid ambiguity.
The ASTM methods contained in the custom fuel monitoring schedule for natural gas sulfur content were updated.	ASTM fuel sulfur analysis methods were updated to correspond with NSPS Subpart GG as revised July 2004.
References to CAM (40 CFR Part 64) were removed; CAM is not applicable to any units/pollutants at NHGC.	See Section 12.5 of this TSD.
Obsolete monitoring conditions associated with	Permit terms linked to initial startup and

Change	Basis
initial startup and testing of the combined cycle units were removed.	commencement of commercial operation of the combined cycle units are no longer relevant.
Monitoring and recordkeeping requirements for the firewater pump engine and emergency generator were expanded to comport with County Rule 324 requirements.	The requirements of County Rule 324 §502.1 and §502.4 applicable to the emergency use engines and were incorporated more completely into the permit.
New template language for visible emissions (opacity) monitoring and recordkeeping was incorporated.	The new visible emissions monitoring and recordkeeping requirements reflect current MCAQD template language for implementing County Rule 300 requirements.
Several corrections were made to regulatory citations.	N/A
A new condition was added providing for a 90 day transition to new monitoring requirements contained in the permit.	A transition period is necessary to allow for software reprogramming and implementation/shakedown of new monitoring approaches/procedures. During the transition, the Permittee must continue to comply with the monitoring requirements of the previous permit.
21. REPORTING REQUIREMENTS	
Obsolete reporting conditions associated with construction, initial startup, and testing of the combined cycle units were removed.	Permit terms linked to construction, initial startup and commencement of commercial operation of the combined cycle units are no longer relevant.
New Condition 21.C was added requiring 24-hour notice prior to the conduct of any tuning or testing activities on the combined cycle units.	See Section 4.4 of this TSD.
The Title V semiannual compliance and monitoring report requirements were revised and expanded based on current MCAQD policy.	MCAQD developed new standard reporting provisions combining the compliance certification and monitoring reports (required under NSPS) into a single report to be submitted semiannually. The revised semiannual compliance certification and monitoring reporting requirements are contained in Section 21.D of the revised permit.
References to CAM (40 CFR Part 64) were removed; CAM is not applicable to any units/pollutants at NHGC.	See Section 12.5 of this TSD.
Several corrections were made to regulatory citations.	N/A
22. TESTING REQUIREMENTS	
Testing requirements for the combined cycle units were revised as follows (see Section 16 of this TSD for details): • Test operating conditions revised to provide flexibility (full load available on day of testing vs. 95-105% nameplate) • NOx and CO testing requirements streamlined to coincide with 40 CFR Part 75 and Part 60 RATA provisions • Optional reduced load condition testing for	The revised testing provisions reflect current MCAQD guidelines for combined cycle plants. HAP testing (formaldehyde and hexane) has been added to confirm minor source status under CAA Section 112. Based on published emission factors, there is a possibility that HAP emissions could exceed major source thresholds.

Change	Basis
PM-10, VOC, and ammonia (subject to approval as part of pre-test protocol) • Ammonia test method CTM-027 or BAAQMD ST-1B specified • Ammonia testing frequency revised to every 3 years (also required within 90 days of complete SCR catalyst replacement) • New testing requirements for formaldehyde and hexane	
24. PERMIT CONDITIONS FOR SURFACE COATING OPERATIONS AS SUPPORT ACTIVITIES FOR THIS FACILITY	
Section 24 was removed from the permit.	The previous permit stated that no surface coating activities other than architectural coatings shall occur. MCAQD elected to remove the condition altogether and renumber the remaining conditions.
26. PERMIT CONDITIONS FOR DUST GENERATING OPERATIONS	
Section 26 was substantially revised and is contained in Section 25 of the revised permit due to renumbering.	Revised dust generating operation permit conditions reflect the current MCAQD template.
27. PERMIT CONDITIONS FOR ABRASIVE BLASTING WITH OR WITHOUT A BAGHOUSE	
Section 27 was substantially revised and is contained in Section 26 of the revised permit due to renumbering.	Revised to reflect County Rule 312 revision (7/2/2003).
28. PERMIT CONDITIONS FOR SURFACE COLD DEGREASERS AS SUPPORT ACTIVITIES FOR THIS FACILITY 29. PERMIT CONDITIONS FOR WIPE CLEANING	
These conditions were combined in to new Condition 27 incorporating County Rule 331 requirements for cold cleaners and wipe cleaning.	The previous permit contained only wipe cleaning provisions and stated that the Permittee shall not conduct cold degreasing subject County Rule 331. NHGC does operate a solvent-based batch cold cleaner. The unit does not qualify as an insignificant activity per Appendix D of the County Air Quality Rules. Therefore, a new section was added containing County Rule 331 requirements applicable to cold cleaners and solvent wipe cleaning. See Section 12.13 of this TSD for further information.
31. PERMIT CONDITIONS FOR VOLATILE ORGANIC COMPOUNDS	
Section 31 was removed from the permit.	The previous permit stated that no activities subject to County Rule 330 shall occur at the facility. MCAQD elected to remove the condition altogether.
APPENDIX A – MAJOR EQUIPMENT LIST	
The NHGC major equipment list was updated.	Updates reflect current information as presented in the NHGC renewal/significant revision permit application.
APPENDIX B – INSIGNIFICANT ACTIVITIES	
New Appendix B was added listing qualifying insignificant activities and bases.	A listing of insignificant activities is standard with MCAQD issued Title V permits.
APPENDIX C – PERMIT SHIELD APPLICABLE REQUIREMENTS	

Change	Basis
New Appendix C was added listing permit shield applicable requirements.	A listing of permit shield applicable requirements is standard with MCAQD issued Title V permits.
APPENDIX D – SCR and CATALYTIC OXIDATION SYSTEM O&M PLANS	
New Appendix D was added containing currently approved versions of the SCR and CAT-OX O&M plans.	See discussion under 19 – Operational Requirements, above.

5. SOURCE DESCRIPTION

The Harquahala Generating Project (HGP) is a combined-cycle electric generating plant with a nominal capacity of 1,060 MW owned and operated by New Harquahala Generating Company, LLC (NHGC). The plant is located in western Maricopa County, Arizona, near Tonopah, approximately 75 km west of Phoenix. The primary equipment at the plant consists of three combined-cycle power blocks, each consisting of a Siemens-Westinghouse 501G natural gas-fired combustion turbine generator (CTG) rated at 240 MW (nominal) and heat recovery steam generator (HRSG). Steam from the HRSG is admitted into a condensing reheat steam turbine generator (STG), one for each power block or a "one-on-one" design layout. The total net output for each unit, with CGT evaporative cooling, is approximately 353 MW, making the total net output for the three-unit facility 1,060 MW (nominal).

Additional emitting equipment and facilities at the plant include two mechanical-draft cooling towers, two emergency diesel engines, and three fuel storage tanks as identified in Section 6 below.

6. REGULATED ACTIVITIES

Emitting equipment and facilities at NHGC are identified in the table below.

1.	**Three Combined Cycle Units (CTG 1, CTG 2 and CTG 3) each with a common reheat condensing steam turbine and electrical generator.**
	Each Combined Cycle Unit consists of the following:
a.	Siemens-Westinghouse 501G combustion turbine operating in combined-cycle mode with a nameplate rating of 240 megawatts electric and fueled by pipeline quality natural gas only with steam injection power augmentation capability.
b.	Reheat condensing steam turbine (121 MW).
c.	Selective Catalytic Reduction (SCR) nitrogen oxides emissions control system for treating the Combustion Turbine exhaust.
d.	Oxidation Catalyst System for controlling carbon monoxide emissions from the Combustion Turbine exhaust.
e.	Continuous emissions monitor (CEM) system that records at least oxides of nitrogen (NOx), carbon monoxide (CO), and oxygen (O_2) content of the System exhaust.
f.	Exhaust stack with height 180 feet above plant grade and inside diameter of 19 feet.
2.	**Wet Cooling Towers**
a.	Two nine-cell wet cooling towers, with each cell rated at 15,000 gallons per minute recirculation rate (135,000 gallons per minute total for each cooling tower) and height 47 feet above plant grade.
b.	Continuous cooling water conductivity monitoring system.
3.	**Emergency Diesel Engines**
a.	One 450 horsepower diesel-fueled engine to drive the firewater pump.

b.	One 1,500 kilowatt diesel-fueled emergency generator to provide power to lube oil pumps and critical project systems.
3.	**Fuel Storage Tanks**
a.	One 500 gallon vehicle diesel fuel storage tank.
b.	One 500 gallon fire pump diesel fuel storage tank.
c.	One 240 gallon vehicle gasoline storage tank.
4.	**Other**
a.	Chemical storage equipment (See Section 7 of this TSD)
b.	Petroleum storage tanks (See Section 7 of this TSD)
c.	One batch solvent cold cleaning machine (non-vapor)

7. INSIGNIFICANT ACTIVITIES

Insignificant activities meeting qualifying criteria of County Rule 100 (definition) and Appendix D are listed in Appendix B of the revised permit. NHGC insignificant activities and qualification bases are documented in the table below.

Chemical Storage			
Description & Storage Location	**Name of Chemical Substance**	**Area in Which Material is Used**	**Qualifying Basis (a)**
Two 1,550 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B	Depositrol (phosphoric acid) BL 5323	Cooling Tower	SD - ITEM 7.
The tank is located south of the gas compressor building	Ammonia 60,000 gallon storage tank (<20% as ammonia)	SCR Catalyst in HRSG	SD - ITEM 5.
1,000 gal. Tank in Zero Liquid Discharge area	Calcium Chloride (38%)	Water Treatment	SD - ITEM 2.
Two 1,550 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B	Flogard POT 6100	Cooling Tower	SD - ITEM 2.
3,000 gal. Tank in Zero Liquid Discharge area	Klaraide PC1192	Water Treatment	SD - ITEM 2.
Two 8,500 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B.	Liquichlor (12% Sodium Hypochlorite, sodium hydroxide and sodium chloride)	Cooling Towers	SD - ITEM 2.
10,000 gal. Tank in Zero Liquid Discharge area	Magnesium chloride (30%)	Water Treatment	SD - ITEM 2.
One 2,000 gal tank in US Filter area	Sodium Hypochlorite (12.5%)	Water Treatment	SD - ITEM 2.
Gas Compression (2 compressors, each hold 660 gallons)	Compressor oil	Gas Compressor	MISC - ITEM 5.
19 transformers located throughout site	Dielectric Fluid in Non-PCB Transformers	19 transformers located throughout site	MISC - ITEM 5.

Switchyard and Transformer Breakers445 lb. Container Total	SF_6 (Sulfur Hexafluoride)	Switch Yard	MISC – ITEM 5.
280 Gal tote in Zero Liquid Discharge	Kleen mtc 103	Zero Liquid Discharge	SD - ITEM 2.
Two 8,000 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B; One 250 Gal tank in the USF skid.	Sulfuric Acid	Cooling Towers and water treatment	SD - ITEM 7.
Zero Liquid Discharge Area - 280 Gallon tote Container Size	Biomate MBC781	Zero Liquid Discharge	SD - ITEM 2.
Two 300 Gal Totes	Caustic Soda (33%)	Water Treatment	SD - ITEM 2.
Three 180 gal. Totes	Control OS 5035 (hydrazine)	HRSGs	SD - ITEM 2.
300 gal. Tote in Zero Liquid Discharge area.	Evaporator Anti-scale Depositrol BL 5306	Water Treatment	SD - ITEM 2.
280 gal. Tote.	Hypersperse MDC150	Water Treatment	SD - ITEM 2.
Two 280 gal. Totes in US Filter Area	Optisperse HP3100 (phosphate) 560 gallons	Water Treatment	SD - ITEM 2.
280 gal. Tote in Zero Liquid Discharge area	Sodium Bisulfate	Water Treatment	SD - ITEM 2.
280 gal. Tote.	Sodium Bisulfate BetzDearBorn DCL 30	ZLD	SD – ITEM 2.
280 gal. Tote.	SoliSep MPT 150	Water Treatment	SD - ITEM 2.
Two 280 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B	Spectrus NX1100 (Magnesium Nitrate and Magnesium Chloride)	Cooling Tower	SD - ITEM 2.
Three 180 gal. Totes	Steamate NA1321 (Aluminum Hydroxide 19%)	HRSGs	SD - ITEM 2.
280 gal. totes in Zero Liquid Discharge area	Foamtrol AF2230 (Oxirane/methoxirane polymer with butyl ether)	Zero Liquid Discharge	SD - ITEM 2.
Two 280 gal. Totes	Polyfloc AE 1125	Water Treatment	SD - ITEM 2.
280 gal. Tote	Polyfloc AE1125 (Isoparaffinic petroleum distillate)	Water Treatment	SD - ITEM 2.
400 gal. Tote	Polyfloc AE1701 (Isoparaffinic petroleum distillate and ammonium acetate)	Water Treatment	SD - ITEM 2.
Three 55 gal. Drums	Corrshield (Sodium molybdate and Sodium Nitrite)	Closed Cooling Water	SD - ITEM 2.

55 Gal. drum in Zero Liquid Discharge	Kleen mtc 511	Zero Liquid Discharge	SD - ITEM 2.
55 Gal. drum in Zero Liquid Discharge	Optisperse	Zero Liquid Discharge	SD - ITEM 2.
Petroleum Storage Tanks			
Tank Designation	**Description / Contents**	**Tank/Container Content (Gallons)**	**Qualifying Basis**
1	Emergency Diesel Generator AST / Diesel	1350 gallon	SD - ITEM 4.
2	Emergency Diesel Fire Pump AST / Diesel	500 gallon	SD - ITEM 4.
3	Diesel AST / Diesel	500 gallon diesel	SD - ITEM 4.
4	Gas Turbine Lube Oil Reservoir / Lube Oil	5,000 gallon (3 on-site)	SD - ITEM 2.
5	Steam Turbine Lube Oil Reservoir / Lube Oil	3,600 gallon (3 on-site)	SD - ITEM 2.
6	Gas Turbine Control Oil Reservoir / Lube Oil	100 gallon (3 on-site)	SD - ITEM 2.
7	Steam Turbine Hydraulic Oil Reservoir / Hydraulic Oil	200 gallon (3 on-site)	SD - ITEM 2.
8	Gas Turbine Starting Package Oil Reservoir / Oil	1,800 gallon (3 on-site)	SD - ITEM 2.
9	Oil-Water Separator / Oil; petroleum products	1,880 gallon (3 on-site)	SD - ITEM 2.
10	Used Oil Tank / Oil; petroleum products	385 gallon	SD - ITEM 2.
11	Main Transformer / Mineral Oil (Non-PCB)	25,620 gallon (3 on-site)	MISC - ITEM 5.
12	Auxiliary Transformer / Mineral Oil (Non-PCB)	2,715 gallon (3 on-site)	MISC - ITEM 5.
13	Oil Rack and Oil Cabinet Lube Oil and petroleum products	1,605 (55-gallon and smaller containers)	SD - ITEM 2.
Other Activities			
Designation	**Description**	**Qualifying Basis**	**Note(s)**
Laboratory Fume Hood	Hanson Model 3SA-47, 142 FPM Exhaust	LPP - ITEM 1.	
Power Washer	Small internal combustion (IC) engine < 50 hp	ICE - ITEM 2.	
Lime Storage Silo	Storage Silo controlled by fabric filter; Pneumatically loaded by truck - emissions generated only during loading; Maximum of 10 hours of operation per year.	Rule 100, Section 200.57 and Rule 200, Section 308.1(c)	(b)
Soda Ash Storage Silo	Storage Silo controlled by fabric filter; Pneumatically loaded by truck - emissions generated only during loading; Maximum of 10 hours of operation per year.	Rule 100, Section 200.57 and Rule 200, Section 308.1(c)	(b)

Table Notes:
(a) Reference to County Rules Appendix D – List of Insignificant Activities
(b) Each Silo has a fabric filter with a manufacturer's guarantee of 0.02 grains per dscf.
Each silo has a flow rate of 1,065 dscfm
0.02 = manufacturer guarantee outlet gr/dscf
1065 = dscfm
7000 = gr/lb
99.90% = bin filter control efficiency (assumed)
10 = hrs/yr operated (unloading)
Potential PM Emissions:
Controlled = 0.0009 tons/yr
Uncontrolled = 0.91 tons/yr

8. ALTERNATIVE OPERATING SCENARIOS

The permit application identifies only one operating scenario as described in Sections 5 and 6 of this document.

9. POTENTIAL EMISSIONS

9.1 Allowable Emission Rates

The table below presents the allowable annual emission rates for regulated air pollutants emitted by NHGC. These limits are federally enforceable; therefore, they establish the facility's potential to emit.

Potential to Emit (tons/year)					
Device	**NOx**	**CO**	**SO_2**	**PM-10**	**VOC**
Combined Cycle Unit CTG1	108	192	23	97	34
Combined Cycle Unit CTG2	108	192	23	97	34
Combined Cycle Unit CTG3	108	192	23	97	34
Cooling Tower 1	NA	NA	NA	3.1	NA
Cooling Tower 2	NA	NA	NA	3.1	NA
TOTAL	**324**	**576**	**69**	**297.2**	**102**

9.2 Potential Emissions for Other Units/Pollutants

Potential emissions for units/pollutants not subject to annual (ton/year) emissions limitations are presented below.

9.2.1 Firewater Pump Engine and Emergency Generator

Potential emissions from then Firewater Pump and Emergency Generator diesel-fired reciprocating internal combustion engines based on equipment design capacities, 500 hours per year operation, and AP-42 emission factors are summarized in the table below followed by detailed supporting calculations.

Potential to Emit (tons/year)					
Device	**NOx**	**CO**	**SO_2**	**PM-10**	**VOC**
Firewater Pump Engine	3.49	0.75	0.05	0.25	0.28
Emergency Generator	15.1	3.45	0.25	0.27	0.40

		Firewater	Emergency				
		Pump Engine	Generator	Units			
Engine design capacity			1500	kW			
		450	2510	bhp			
Fuel input			137	gal/hr			
Fuel heat input		3.15	18.8	MMBtu/hr			
Annual operation		500	500	hrs/yr			
Firewater pump engine PTE							
Pollutant	EF	Units	Ref.	Potential Emissions			
				lb/hr	tpy		
NOx	3.10E-02	lb/bhp-hr	1	1.40E+01	3.49E+00		
CO	6.68E-03	lb/bhp-hr	1	3.01E+00	7.52E-01		
SO2	4.05E-04	lb/bhp-hr	2 (a)	1.82E-01	4.55E-02		
PM-10	2.20E-03	lb/bhp-hr	1	9.90E-01	2.48E-01		
VOC	2.51E-03	lb/bhp-hr	1	1.13E+00	2.83E-01		
Emergency generator PTE						Total PTE for	
						both engines	
Pollutant	EF	Units	Ref.	Potential Emissions			
				lb/hr	tpy	lb/hr	tpy
NOx	2.40E-02	lb/bhp-hr	2	6.02E+01	1.51E+01	7.42E+01	1.85E+01
CO	5.50E-03	lb/bhp-hr	2	1.38E+01	3.45E+00	1.68E+01	4.20E+00
SO2	4.05E-04	lb/bhp-hr	2	1.02E+00	2.54E-01	1.20E+00	2.99E-01
PM-10	5.73E-02	lb/MMBtu	2	1.08E+00	2.69E-01	2.07E+00	5.16E-01
VOC	6.42E-04	lb/bhp-hr	2	1.61E+00	4.03E-01	2.74E+00	6.85E-01
References/notes							
1. EPA AP-42 Chapter 3.3; October, 1996.							
2. EPA AP-42 Chapter 3.4; October, 1996.							
(a) Reference 2 used because SO2 emission factor based on fuel sulfur is believed to be more accurate.							

9.2.2 Sulfuric Acid Mist

Potential emissions of sulfuric acid mist (H_2SO_4) were not quantified as part of the initial PSD permitting for NHGC. As part of the permit renewal, MCAQD required that H_2SO_4 emissions be quantified to confirm that the potential to emit for the facility was below the PSD significant emission rate threshold of 7 tons/year.

The table below documents the H_2SO_4 potential to emit calculation for the NHGC combustion turbines. As shown, potential emissions based on a maximum natural gas total sulfur content of 0.5 grains per 100 cubic feet (0.005 gr/scf), consistent with "pipeline natural gas" as defined in 40 CFR 72.2, and assuming continuous annual operation of the combustion turbines at full load, are 2.32 tons/year/turbine, or 6.97

tons/year total. Thus, the facility-wide potential to emit is less than the 7 ton/year PSD significant emission rate threshold.

The current NHGC permit limits natural gas sulfur concentration to less than or equal to 0.0075 gr/scf. The actual sulfur content of natural gas delivered to the site based on El Paso Corporation records for 2005 ranged from 0.08 to 0.25 gr/100 scf, substantially below the 0.5 gr/100 scf "pipeline natural gas" threshold. As documented in Sections 4.9 and 11.2 of this TSD, the revised permit contains a new requirement limiting natural gas sulfur content to less than or equal to 0.005 gr/scf, calculated as a 12-month rolling average. This requirement serves to make the facility-wide potential-to-emit for H_2SO_4 of less than 7 tons/yr enforceable.

NHGC H2SO4 PTE Calculation

Given:

Fuel sulfur content	0.005	grains/scf (max. for pipline quality natural gas)
Fuel density	0.0441	lb/scf
S --> SO3 at CT exh.	0.75%	R. Kagolanu, Siemens Power Generation (< 1%)
SO2 to SO3 at Oxid. Cat.	8.0%	Oxidation catalyst vendor (6% expected, < 8%)
SO2 to SO3 for HRSG	0.75%	R. Kagolanu, Siemens Power Generation (< 1%)
SO2 to SO3 for SCR Cat.	1.0%	Hitachi-Zosen (0.2% expected, < 1%)
Reaction of ammonia slip to form NH3-S compounds	1.0%	Conservative engineering estimate (low)
Molecular Wt of S	32	
Molecular Wt of SO2	64	
Molecular Wt of H2SO4	98	
Ambient Temperature	59	deg F (conservative annual average temperature)
Hours per year	8760	
Fuel Flow (lb/hr)	103,960	100% load fuel flow

Calculated Values:

(A)	SO2 (lb/hr, assumes 100% conv.)	3.368	Worst case SO2 with no SO3 formation (see calc below)
(B)	SO2 (lb/hr, actual) at CT Exhaust	3.342	0.75% of the sulfur (A) is actually converted to SO3
(C)	SO2 (lb/hr, after oxidation catalyst)	3.075	8% of the sulfur from (B) is converted to SO3
(D)	SO2 (lb/hr, for HRSG effect)	3.052	0.75% of the sulfur (C) is converted to SO3
(E)	SO2 (lb/hr, for SCR effect)	3.021	1% of sulfur (D) is converted to SO3
(F)	SO2 available for conversion to H2SO4	0.346	Equivalent to (A) - (E)
(G)	H2SO4 (lb/hr)	0.5302	(F) * 98 (Mol. Wt. H2SO4)/64 (Mol. Wt. SO2)
(H)	H2SO4 reduction due to interaction with ammonia	0.0053	
(I)	H2SO4 (lb/hr) after reduction due to ammonia	0.5274	(G) - (H)
	H2SO4 (tons/year), max. per combustion turbine	**2.32**	(I) * 8760/2000
	H2SO4 (tons/year), max. for facility	6.97	

#(A) = grains S/scf * (1 lb/7000 grains) * (fuel flow, lb/hr) * (1/ lb/scf) * (Mol. Wt SO2/Mol. Wt S)

9.2.3 Hazardous Air Pollutants

Potential Hazardous Air Pollutant (HAP) emissions from the NHGC combustion turbines and emergency use engines are documented below based maximum operating rate and literature emission factors. For the combustion turbines, EPA AP-42 emission factors were used except for formaldehyde and hexane, where California Air Toxics Emission Factor (CATEF) database factors were supplemented. No emission factor for hexane is reported in the current version of AP-42 for gas turbines (Chapter 3.1; 4/2000). For formaldehyde, the CATEF emission factor representative of oxidation catalyst controlled emissions was considered more accurate than the AP-42 factor, representing uncontrolled emissions.

As documented in the table below, the maximum single HAP emission rate (hexane) is 6.82 tons/yr and total combined HAP emissions are 20.2 tons/yr. These potential emission rates are below the applicable major source thresholds of 10 and 25 tons/year for single and total combined HAP, respectively, specified in CAA Section 112 and 40 CFR Part 63. MCAQD has included additional HAP testing requirements in the revised permit to confirm emission rates and minor source status (see Section 16 of this TSD).

Combined Cycle Units					**Emergency**	**Total**	
Design heat input/CT	2371	MMBtu/hr	HHV @ 59 deg. F		**Engines**		
Total design heat input	7113	MMBtu/hr	Total for 3 units		(see below)		
	EF	Ref.	PTE		PTE	PTE	
Pollutant	(lb/MMBtu)		lb/hr	tpy	tpy	tpy	
1-3-Butadiene	4.30E-07	1	3.06E-03	1.34E-02	3.08E-05	1.34E-02	
Acetaldehyde	4.00E-05	1	2.85E-01	1.25E+00	7.22E-04	1.25E+00	
Acrolein	6.40E-06	1	4.55E-02	1.99E-01	1.10E-04	2.00E-01	
Benzene	1.20E-05	1	8.54E-02	3.74E-01	4.39E-03	3.78E-01	
Ethylbenzene	3.20E-05	1	2.28E-01	9.97E-01		9.97E-01	
Formaldehyde	1.12E-04	2	7.97E-01	3.49E+00	1.30E-03	3.49E+00	
Hexane	2.19E-04	2	1.56E+00	6.82E+00		6.82E+00	
Naphthalene	1.30E-06	1	9.25E-03	4.05E-02		4.05E-02	
POM	2.20E-06	1	1.56E-02	6.85E-02	1.13E-03	6.97E-02	
Propylene oxide	2.90E-05	1	2.06E-01	9.03E-01	1.51E-02	9.19E-01	
Toluene	1.30E-04	1	9.25E-01	4.05E+00	1.64E-03	4.05E+00	
Xylenes	6.40E-05	1	4.55E-01	1.99E+00	1.13E-03	2.00E+00	
TOTAL		3		2.02E+01	2.56E-02	2.02E+01	
MAX		4		6.82E+00	1.51E-02	6.82E+00	
References/notes							
1. EPA AP-42 Chapter 3.1, Table 3.1-3. EF for uncontrolled gas turbines. April 2000.							
2. California Air Toxics Emission Factor database (CATEF). Median EF for CatOx/SCR controlled gas turbines.							
3. Total from above minus Naphthalene (included in PAH/POM).							
4. Maximum emitted pollutant from above.							
Emergency Use Engines		Firewater	Emergency				
		Pump Engine	Generator	Units			
Engine design capacity			1500	kW			
		450	2510	bhp			
Fuel input			137	gal/hr			
Fuel heat input		3.15	18.8	MMBtu/hr			
Annual operation		500	500	hrs/yr			
Firewater pump engine PTE							
Pollutant	EF	Units	Ref.	Potential Emissions			
				lb/hr	tpy		
Benzene	9.33E-04	lb/MMBtu	1	2.94E-03	7.35E-04		
Toluene	4.09E-04	lb/MMBtu	1	1.29E-03	3.22E-04		
Xylenes	2.85E-04	lb/MMBtu	1	8.98E-04	2.24E-04		
Propylene	2.58E-03	lb/MMBtu	1	8.13E-03	2.03E-03		
1.3-Butadiene	3.91E-05	lb/MMBtu	1	1.23E-04	3.08E-05		
Formaldehyde	1.18E-03	lb/MMBtu	1	3.72E-03	9.29E-04		
Acetaldeyhde	7.67E-04	lb/MMBtu	1	2.42E-03	6.04E-04		
Acrolein	9.25E-05	lb/MMBtu	1	2.91E-04	7.28E-05		
POM	1.68E-04	lb/MMBtu	1	5.29E-04	1.32E-04		
Emergency generator PTE						Total PTE for	
						both engines	
Pollutant	EF	Units	Ref.	Potential Emissions			
				lb/hr	tpy	tpy	
Benzene	7.79E-04	lb/MMBtu	2	1.46E-02	3.65E-03	4.39E-03	
Toluene	2.81E-04	lb/MMBtu	2	5.27E-03	1.32E-03	1.64E-03	
Xylenes	1.93E-04	lb/MMBtu	2	3.62E-03	9.06E-04	1.13E-03	
Propylene	2.79E-03	lb/MMBtu	2	5.24E-02	1.31E-02	1.51E-02	
1.3-Butadiene						3.08E-05	
Formaldehyde	7.89E-05	lb/MMBtu	2	1.48E-03	3.70E-04	1.30E-03	
Acetaldeyhde	2.52E-05	lb/MMBtu	2	4.73E-04	1.18E-04	7.22E-04	
Acrolein	7.88E-06	lb/MMBtu	2	1.48E-04	3.70E-05	1.10E-04	
POM	2.12E-04	lb/MMBtu	2	3.98E-03	9.95E-04	1.13E-03	
						2.56E-02	Max. HAP
						1.51E-02	Total HAP
References/notes for emergency engine PTE calculations							
1. EPA AP-42 Chapter 3.3; October, 1996.							
2. EPA AP-42 Chapter 3.4; October, 1996.							
(a) Reference 2 used because SO2 emission factor based on fuel sulfur is believed to be more accurate.							

10. EMISSION LIMITS

10.1 Annual Emission Limits:

	Rolling 365-day Total Emission Limits (tons)		Rolling 12-month Total Emission Limits (tons)		
Device	**NOx**	**CO**	**SO_2**	**PM-10**	**VOC**
Combined Cycle Unit CTG1	108	192	23	97	34
Combined Cycle Unit CTG2	108	192	23	97	34
Combined Cycle Unit CTG3	108	192	23	97	34
Cooling Tower 1	NA	NA	NA	3.1	NA
Cooling Tower 2	NA	NA	NA	3.1	NA

No changes have been made to the annual (ton/yr) emission limits identified in the above table as part of this Title V permit renewal and significant revision. NOx and CO emission limits were revised to a 365-day rolling total basis from a 12-month rolling total to enhance enforceability.

10.2 Combined Cycle Unit Emission Limits During Normal Operation:

	Emission Limits (pounds per hour, 1-hour average)				
Device	**NOx**	**CO**	**SO_2**	**PM-10**	**VOC**
Combined Cycle Unit CTG1	25.0	37.0	5.8	24.0	7.8
Combined Cycle Unit CTG2	25.0	37.0	5.8	24.0	7.8
Combined Cycle Unit CTG3	25.0	37.0	5.8	24.0	7.8

	Emission Limits				
Device	**NOx**	**CO**	**PM-10 Total (Filterable plus Condensable)**	**VOC**	**Ammonia**
Each Combined Cycle Unit CTG1, CTG2 or CTG3 Exhaust	2.5 ppmvd corrected to 15% O_2 3-hour rolling average	10 ppmvd corrected to 15% O_2 3-hour rolling average	0.0143 lb/MMBtu 3-hour average	2.8 ppmvd corrected to 15% O_2 3-hour average	10 ppmvd corrected to 15% O_2 24-hour average

No changes were made to the hourly (lb/hr), concentration (ppm), or heat input (lb/MMBtu)-based emission limits identified in the above tables as part of this Title V permit renewal and significant revision. The averaging period was added to the lb/hour limits and lb/MMBtu limit for PM-10 for clarification. Concentration-based limits for VOC and ammonia were revised to a 3-hour average and 24-hour average, respectively from the prior rolling averages. Rolling is

irrelevant because compliance is determined by periodic performance testing rather than continuous emissions monitoring. The revised permit specifies that for ammonia, compliance shall be determined as the average of three separate test runs each not less than one hour in duration as required by Condition 22.A. This allows the source to perform longer duration test runs (up to 8 hours) consistent with the averaging period while providing for practical enforceability.

10.3 Combined Cycle Unit Limits during Startup, Shutdown, Tuning, and Testing

		Emission Limits			
		Pounds per hour, 1-hour average			**Pounds per event**
Device	**Condition**	**NOx**	**CO**	**VOC**	**CO**
Combined Cycle Units 1-3	Cold Start	220	2,300	440	3,000
Combined Cycle Units 1-3	Warm/Hot Start/Shutdown	151	2,300	237	2,600
Combined Cycle Units 1-3	Tuning/Testing	151	2,300	237	2,600

As documented in Section 4.7 of this TSD, the lb/event limitations were removed for NOx and VOC but retained for CO as part of the renewal/significant permit revision. The NOx, CO, and VOC lb/hr hour and CO lb/event limitations for SU/SD operation of the combined cycle units remain unchanged from the previous permit.

10.4 Cooling Tower Emission limits

As shown in Section 9.1 of this TSD, each of the NHGC cooling towers is subject to a 3.1 ton/year BACT emission limit (12-month rolling total).

10.5 Firewater Pump Engine and Emergency Generator Emission Limits

The Firewater Pump Engine and Emergency Generator are each subject to a 20 percent opacity standard pursuant to County Rule 324 §303.

10.6 Generally Applicable Emission Limits

Generally applicable emission limitations include off-site sulfur oxide limits (SIP Rule 32.F), fuel burning PM limits (SIP Rule 31.H), opacity limits (County Rule 320 §300, SIP Rule 32.A), and general gaseous or odorous air contaminant limitations (SIP Rule 32.A). Permit conditions incorporating these requirements remain unchanged from the previous permit.

11. OPERATIONAL REQUIREMENTS

11.1 General Facility-wide Requirements

General facility-wide operational requirements associated with County Rule 320 (Odors and Gaseous Air Contaminants) and SIP Rule 32.D are incorporated in Condition 19.A of the revised permit. No changes to these requirements were made other than correcting regulatory references.

11.2 Operational Requirements for Combined Cycle Units

11.2.1 Fuel Restriction

The Combined Cycle Unit fuel restriction was revised to include a 0.005 gr/scf total sulfur content limit on natural gas, calculated as a 12-month rolling average and incorporate minor language corrections. The new sulfur content limit was imposed to make potential H_2SO_4 emissions enforceable at less than 7 tons/yr. The natural gas fuel restriction from the existing permit (total sulfur content $\leq$ 0.0075 gr/scf) was maintained. Revised Permit Condition 19.B.1 reads as follows:

The Permittee shall combust only pipeline natural gas in Combined Cycle Units CGT1, CGT2, and CGT3. The total sulfur content of the pipeline natural gas shall not exceed 0.0075 grains per standard cubic foot over any averaging period and 0.005 grains per standard cubic foot calculated as a 12-month rolling average.

11.2.2 Startup, Shutdown, Testing and Tuning Operating Conditions

Several changes were made to existing permit operational requirements related to startup, shutdown and testing/tuning operations. Specific changes and revised permit conditions are discussed in detail in Section 4 of this TSD.

11.2.3 NSPS General Provisions

New Permit Condition 19.B.3 was added citing the general operation and maintenance requirements of 40 CFR 60.11(d).

11.3 Operational Requirements for Selective Catalytic Reduction Emission Control Systems

Operational requirements for the Combined Cycle Unit SCR systems as contained in Condition 19.C of the revised permit are as follows:

- Requirement to install, operate, and maintain SCR systems on each Combined Cycle Unit.
- Requirement to maintain and comply with an Operations and Maintenance (O&M) plan (included in Appendix D of revised permit) for each SCR system.
- Control system design requirement limiting ammonia injection to catalyst inlet temperature range specified in the SCR O&M Plan.

11.4 Operational Requirements for Oxidation Catalyst Emission Control Systems

Operational requirements for the Combined Cycle Unit Oxidation Catalyst systems as contained in Condition 19.D of the revised permit are as follows:

- Requirement to install, operate, and maintain Oxidation Catalyst systems on each Combined Cycle Unit.
- Requirement to maintain and comply with an Operations and Maintenance (O&M) plan (included in Appendix D of revised permit) for each Oxidation Catalyst system.

11.5 Operational Requirements for Cooling Towers

Operational limits for the cooling towers as contained in Condition 19.E of the revised permit are as follows:

- Requirement that cooling towers be equipped and maintained with high efficiency drift eliminators certified by the cooling towers' vendor to achieve less than 0.0003 percent drift.
- Limitation on cooling water TDS to ≤ 20,000 ppm.

11.6 Operational Requirements for the Firewater Pump Engine and Emergency Generator

Operational limits for the Firewater Pump Engine and Emergency Generator as contained in Condition 19.F of the revised permit are as follows:

- Fuel restriction: diesel fuel with sulfur content ≤ 0.05 percent.
- Operation permitted only for emergency conditions or routine maintenance checks.
- Limitation on hours of operation (≤ 500 hours/yr) consistent with EPA policy on limiting potential to emit for emergency use equipment.

12. APPLICABLE REQUIREMENTS

12.1 Prevention of Significant Deterioration (PSD, 40 CFR 52.21 and County Rule 240 §308)

Maricopa County administers a delegated PSD program. Therefore, the provisions of both 40 CFR 52.21 and County Rule 240 §308 are applicable to new major sources or major modifications to existing major sources. NHGC is subject to permit requirements associated with PSD Best Available Control Technology (BACT, 40 CFR 52.21(j) and County Rule 240 §308.1a, d, & e). These permit requirements, including both emissions limitations and operational requirements (e.g., fuel sulfur limitations), are contained in Sections 18 and 19 of the revised permit, as identified in Sections 10 and 11 of this TSD. Monitoring/recordkeeping and reporting requirements associated with BACT permit are contained in Sections 20 and 21 of the revised permit. Except as noted in Section 4 of this TSD, BACT conditions and associated monitoring, recordkeeping and reporting contained in the revised permit are consistent with the original PSD/Title V permit issued to NHGC.

12.2 New Source Performance Standards (NSPS, 40 CFR 60)

12.2.1 Subpart GG – Standards of Performance for Stationary Gas Turbines

APPLICABILITY
NSPS Subpart GG (incorporated by reference at County Rule 360 §301.40) applies to stationary gas turbines with a peak input of 10 million BTU per hour or greater. The three NHGC combustion turbines, each with a peak heat input of 2,138 MMBtu/hour (LHV, 59 degrees F), meet the applicability provisions of Subpart GG.

NSPS Subpart GG has underdone significant revision since the original NHGC PSD/Title V permit was issued in 2001. Revisions to the federal rule were promulgated on July 8, 2004 and February 24, 2006.[5] The permit was revised to reflect the current version of NSPS Subpart GG (as of September 2006).

[5] See 69 FR 41360, July 8, 2004 and 71 FR 9457, February 24, 2006.

EMISSION LIMITATIONS AND STANDARDS

NOx (§60.332) – Emission limit calculated according to the following equation under §60.332(a)(1): STD = 0.0075 x (14.4/Y) + F

Where STD is the allowable ISO corrected NOx concentration (% by volume at 15% oxygen, dry basis)

Y = manufacturers rated heat rate at rated load (kilojoules per watt hour)

F is an optional allowance for fuel-bound nitrogen.

For the NHGC combustion turbines, Y ≈ 9.6 (2,292.2 GJ/240 MW), therefore STD = 0.01125 %, or 112 ppm @ 15 % oxygen.

The applicable NOx BACT limitation for the NHGC combined cycle units is 2.5 ppmvd, corrected to 15 percent oxygen on a 3-hour rolling average. This limit is far more stringent than the applicable NSPS limit. As described in Section 15 of this TSD, the BACT and NSPS NOx limitations were streamlined as part of the original PSD/Title V permit. The NSPS NOx limitation was subsumed by the more stringent BACT limitation.

SO_2 (§60.333) – Emission limit of 0.015 percent SO_2 by volume at 15 percent oxygen and on a dry basis or fuel (natural gas) limited to total sulfur content of 0.8 percent by weight (8000 ppmw).

The applicable SO_2 BACT limitation for the NHGC combined cycle units includes a natural gas total sulfur limitation of ≤ 0.0075 gr/scf. Assuming a natural gas density of 0.0441 lb/scf, this equates to 0.0024 percent or 24.3 ppmv. This fuel sulfur limit is far more stringent than the applicable NSPS requirement. As described in Section 15 of this TSD, the BACT and NSPS SO_2 fuel sulfur limitations were streamlined as part of the original PSD/Title V permit. The NSPS SO2 (fuel sulfur) limitation was subsumed by the more stringent BACT limitation.

MONITORING

Applicable monitoring requirements for NOx and SO_2 are specified in §60.334(c), (h), (i), and (j). NOx CEMS meeting the more rigorous requirements of 40 CFR Part 75 and 40 CFR Part 60 are used to demonstrate compliance with the streamlined NOx limits (2.5 ppmvd corrected to 15 percent oxygen, 3-hour rolling average). According to §60.334 (b)(3)(iii), a NOx CEMS installed for purposes of compliance with 40 CFR Part 75 may be used to meet the requirements of Subpart GG.

The NOx monitoring provisions contained in the revised permit are associated with the more stringent BACT limitation. Per EPA White Paper Number 2 guidance, monitoring, recordkeeping, and reporting associated with a streamlined (subsumed) limit is not required "unless reliance on that monitoring would diminish the ability to assure compliance with the streamlined requirement." As documented in Section 15 of this TSD, NOx monitoring requirements meet the streamlining safeguards and are at least as stringent as those required by the NSPS.

Fuel sulfur content monitoring: The current permit contains an approved custom fuel monitoring schedule in accordance with §60.334(h)(4). NHGC did not request removal of this schedule in favor of other NSPS monitoring options available in the current version of Subpart GG [according to §60.334(h)(3) a source may elect not to monitor the total sulfur content of the natural gas if it is demonstrated to meet the

definition of natural gas (0.2 gr/scf)]. The more robust custom fuel monitoring schedule, used to demonstrate compliance with the BACT natural gas sulfur content limit and subsumed NSPS limit has been retained in the revised permit.

REPORTING
Excess emissions and monitor downtime reporting requirements under Subpart GG are specified in §60.334(j). As discussed above, the NHGC permit contains more stringent limitations for NOx and SO_2 (fuel sulfur content) associated with BACT. As part of the original PSD/Title V permitting process, monitoring and reporting requirements were streamlined (See Section 15 of this TSD). Streamlined reporting requirements for Combined Cycle Units are contained in Sections 16 and 21 of the revised permit.

TESTING
The initial performance test requirements of Subpart GG have been completed in accordance with §60.8 and §60.335. Ongoing periodic testing requirements are specified in Section 22 of the revised permit.

12.2.2 Subpart A – General Provisions

NSPS Subpart A (incorporated by reference at County Rule 360 §301.40) applies to each affected facility, as specified in the relevant source category NSPS. Subpart A contains general requirements for notifications, monitoring, performance testing, reporting, recordkeeping, and operation and maintenance provisions. Because the NHGC combined cycle units are subject to NSPS Subpart GG, the provisions of Subpart A are applicable. However, some of these requirements have been subsumed by the streamlined permit conditions addressing BACT and NSPS.

Applicable requirements associated with NSPS Subpart A are referenced in Sections 19.B, 20.A, and 21.A of the revised permit.

12.3 Acid Rain Program (40 CFR 72 – 76, County Rule 371)

NHGC is subject to the acid rain requirements of Title IV of the CAA; specifically, 40 CFR 72 (Permits Regulation), 40 CFR 73 (Sulfur dioxide allowance system), and 40 CFR 75 (continuous emission monitoring). In accordance with acid rain program requirements, NHCG must hold sufficient annual SO_2 allowances (not less than the total annual emissions from the unit for the previous calendar year), perform continuous emission monitoring in accordance with 40 CFR 75, and conduct associated recordkeeping and reporting. The provisions of 40 CFR Part 76 - Acid Rain Nitrogen Oxides Emission Reduction Program apply only to coal-fired units and therefore are not applicable to NHGC. The NHGC Phase II acid rain permit is incorporated by reference in the Title V permit.

12.4 Title V Permit Provisions (County Rule 210)

NHGC is a major stationary source subject to the Title V permit provisions of County Rule 210. This permit serves to both renew existing Permit Number V99-015 and incorporate a significant revision in accordance with County Rule 210 §406.

12.5 Compliance Assurance Monitoring (CAM, 40 CFR 64)

40 CFR Part 64 applies to each pollutant-specific emissions unit at a major source if the unit satisfies all of the following:

- The unit is subject to an emission standard for the pollutant other than an exempted emission limit or standard under 40 CFR §64.2(b)(1)
- The unit uses a control device to achieve compliance
- The unit has a pre-control potential emission greater than or equal to 100% of the major source threshold

The NHGC combined cycle units utilize SCR and oxidation catalyst systems to control NOx, CO, and VOC emissions, each of which is subject emission limitations/standards. Potential uncontrolled emissions of VOC from each unit are below the applicable major source threshold of 100 tons/yr; therefore CAM is not applicable.

34 tons/yr (allowable VOC emission rate per unit) / (Oxidation catalyst VOC control efficiency: 60%) = 57 tons/yr

For NOx and CO emissions, the Title V permit specifies the use of CEMS, which qualify as a "continuous compliance determination method" per the definition at 40 CFR 64.1. Therefore, in accordance with 40 CFR 64.2(b)(vi), CAM is not applicable to NOx and CO emissions from the combined cycle units.

12.6 County Rule 324 – Stationary Internal Combustion Engines

County Rule 324 rule was adopted on October 22, 2003; therefore, it was not included in the previous permit. Rule 324 applies to the NHGC firewater pump engine and emergency generator. The units are eligible for partial exemption in accordance with §§104.1 and 104.7. Requirements of Rule 324 applicable to the subject units include §§301, 303, 502.1, and 502.4 as outlined below.

- §301: Fuel sulfur content limit of 0.05%
- §303: 20% opacity limit
- Recordkeeping provisions of §§502.1 and 502.4, including:
  - Engine data records (engine combustion type, manufacturer, model, rated brake horsepower, serial number and location)
  - Annual hours of operation
  - Explanation of use

12.7 County Rule 320; SIP Rule 32 – Odors and Gaseous Air Contaminants

County Rule 320 and SIP Rule 32 contain generic requirements for limiting odors and gaseous air contaminants. Revised County Rule 320 (as of July 2, 2003) and SIP Rule 32.A have been incorporated into the permit. Requirements applicable to NHGC include: 1) the general requirement not to emit odors or gaseous air contaminants in such quantities or concentrations as to cause air pollution (County Rule 320 §300 and SIP Rule 32.A) and 2) general material containment requirements to limit leakage and evaporation of materials (County Rule 320 §302).

12.8 County Rule 300; SIP Rule 30 – General Visible Emissions/Opacity Limits

County Rule 300 and SIP Rule 30 include generally applicable requirements for visible emissions and opacity. County Rule 300 is locally enforceable only. There have been no changes to Rule 300 since issuance of the last Title V permit; the Rule was last revised on February 2, 2001. County Rule 300 and SIP Rule 30 specify opacity limitations of 20 percent and 40 percent, respectively, which apply to equipment not subject to source-specific opacity requirements. County Rule 300 and SIP Rule 30 limitations are referenced in Condition 18.D.3 of the revised permit.

New monitoring and recordkeeping provisions for generally applicable opacity standards are included in Section 20.D.1 of the revised permit. The Permittee is required to conduct a visual inspection of stack emissions from the combined cycle units and the cooling towers during each week that the equipment is operated more than 10 hours. The Permittee is required to conduct a monthly visual inspection of emissions from the firewater pump engine and emergency generator, during operation. If visible emissions, other than combined water, are observed, the Permittee must monitor emissions in accordance with EPA Method 9. Initial Method 9 readings shall be taken within 3 days of the visual emissions observation if the Permittee has not received either a compliance status notification or NOV regarding an opacity standard in the past 12 months or within one day if otherwise. If the emitting equipment is not operating on the day that the initial Method 9 opacity reading is required to be taken, then the initial Method 9 opacity reading shall be taken the next day that the emitting equipment is in operation. If the problem causing the visible emissions is corrected before the initial Method 9 opacity reading is required to be performed, and there are no visible emissions (excluding uncombined water) observed from the previously emitting equipment while the equipment is in normal operation, the Permittee shall not be required to conduct the Method 9 opacity readings.

Follow-up Method 9 readings shall be performed while emitting equipment is in standard mode operation in accordance with the following schedule:

(1) Daily:
   a) Except as provided in paragraph 3 below, a Method 9 opacity reading shall be conducted each day that the emitting equipment is operating until a minimum of 14 daily Method 9 readings have occurred.
   b) If the Method 9 opacity readings required by this Permit Condition are less than 20% for 14 consecutive days, the frequency of Method 9 opacity readings may be decreased to weekly, in accordance with paragraph 2 of this Permit Condition.

(2) Weekly:
   a) If the Permittee has obtained 14 consecutive daily Method 9 readings which do not exceed 20% opacity, the frequency of Method 9 readings may be decreased to once per week for any week in which the equipment is operated.
   b) If the opacity measured during a weekly Method 9 reading exceeds 20%, the frequency of Method 9 opacity readings shall revert to daily, in accordance with paragraph 1 of this Permit Condition.
   c) If the opacity measured during the required weekly Method 9 readings never exceeds 20%, the Permittee shall continue to obtain weekly opacity readings until the requirements of paragraph 3 of this Permit Condition are met.

(3) Cease Follow-up Method 9 Opacity Monitoring:

Regardless of the applicable monitoring schedule, follow-up Method 9 opacity readings may cease if the emitting equipment, while in its standard

mode of operation, has no visible emissions, other than uncombined water, during every Method 9 opacity observation taken for two weeks.

12.9 SIP Rule 311 §304; SIP Rule 31.H – General Particulate Matter Limits for Fuel Burning Equipment

SIP Rule 31.H and SIP Rule 311 §304 contain process weight rate-based equations for determining allowable PM emission rate for fuel combustion sources. The equation applicable to fuel burning equipment with a heat input rating of 4,200 MMBtu/hr or less (shown below) results in an allowable emission rate for the NHGC combined cycle units of 401.7 lb PM /hour (per unit). This is significantly greater than the 24.0 lb/hour BACT PM-10 limitation; therefore, SIP Rule 31.H and SIP Rule 311 §304 are effectively subsumed by the BACT requirement.

$E = 1.02(Q)^{0.769}$
E = the maximum allowable PM emission rate in lb/hr
Q = the heat input in million Btu/hr

12.10 SIP Rule 32.F – Off-site Sulfur Oxide Emission Limits

SIP Rule 32.F establishes concentration limits for off-site impacts of sulfur oxides and sulfuric acid. These limitations for SO_2 are referenced in the revised permit and remain unchanged from the previous permit. The fuel sulfur content limit serves to limit the emissions of sulfur dioxide and therefore off-site impacts.

12.11 County Rule 310; SIP Rule 310; SIP Rule 31.A – Fugitive Dust Emissions

County Rule 310, SIP Rule 310, and SIP Rule 31.A contain requirements for fugitive dust generating operations. The NHGC permit was revised to incorporate new template permit language developed by MCAQD incorporating these requirements. The major elements of the fugitive dust provisions contained in Section 25 of the revised permit are summarized below:

1. Dust control plan required
   The Permittee is required to submit a dust control plan and obtain approval from the Control Officer prior to commencing any dust generating operation. Procedures for plan revision are specified.

2. Allowable emissions
   Visible fugitive dust emissions shall not exceed 20 percent opacity. Affirmative defense provisions for exceedances of the opacity limit during wind events are provided.

3. Operational Requirements
   Operational requirements, including stabilization, control measures, and work practices are specified for unpaved haul/access roads, unpaved parking lots, open areas, vacant lots, disturbed areas, bulk material handling, and open storage piles.

4. Monitoring and Recordkeeping
   Monitoring and recordkeeping requirements for fugitive dust generating activities include maintenance of a written log of actual application or implementation of control measures pursuant to the approved Dust Control Plan and specified test methods for opacity and stabilization observations.

5 Fugitive dust control measures
The revised permit contains 21 tables specifying fugitive dust control measures consistent with County Rule 310 requirements.

12.12 County Rule 312; SIP Rule 312 – Abrasive Blasting

Section 26 of the revised permit contains requirements for abrasive blasting consistent with County Rule 312 as revised 7/2/2003. In general, the requirements include a 20 percent opacity limitation, operational limitations, and control measures for abrasive blasting activities.

12.13 County Rule 331; SIP Rule 331 – Solvent Degreasing Operations

Section 27 of the revised permit contains requirements for cold degreasing and wipe cleaning activities. The previous permit did not contain Rule 331 requirements applicable to cold cleaning machines. During this permit review; MCAQD determined that NHGC does operate a batch solvent degreaser (cold cleaner) that does not qualify as an insignificant activity per Appendix D of the County Air Regulations. Therefore, the permit was revised to incorporate Rule 331 requirements applicable to cold cleaners and solvent wipe cleaning activities. In general, the permit contains the following requirements with respect to solvent degreasing equipment/operations:

1. Operational limitations
2. Solvent handling requirements
3. Equipment requirements for all cleaning machines
4. Operating and signage requirements for cleaning machines
5. Solvent specifications
6. Non-vapor cleaning machine requirements
7. Special non-vapor cleaning situations
8. Monitoring, recordkeeping, and reporting

12.14 County Rule 335; SIP Rule 335 – Architectural Coatings

Section 24 of the revised permit contains requirements for architectural coatings consistent with County Rule 335 and SIP Rule 335. These requirements and permit conditions remain unchanged from the previous permit. In general, the permit contains the following requirements with respect to architectural coatings:

1. Allowable specifications, including VOC content for various architectural coatings
2. Exemptions
3. Container labeling requirements
4. Equipment cleanup requirements
5. Recordkeeping, reporting, and testing

12.15 County Rule 340; SIP Rule 340 – Cutback and Emulsified Asphalt

Section 28 of the revised permit contains requirements for cutback and emulsified asphalt consistent with County Rule 340 and SIP Rule 340. These requirements and permit conditions remain unchanged from the previous permit. In general, the permit contains the following requirements with respect to the cutback and emulsified asphalt:

1. Asphalt VOC content limitations
2. Exclusions from VOC content limitations
3. Monitoring, recordkeeping, and testing

13. POTENTIALLY APPLICABLE REQUIREMENTS

13.1 Risk Management Plans (40 CFR 68)

According to the NHGC permit application, 40 CFR Part 68 is not applicable to the facility. The aqueous ammonia solution used for the combined cycle unit SCR systems and stored on site is less than 20 percent ammonia. Ammonia solutions with a concentration less than 20 percent are not subject to 112(r) RMP requirements in accordance with 40 CFR 68.130.

Future applicability 40 CFR 68 could be triggered if hazardous or flammable materials are stored above threshold quantities. The potentially applicable requirements of 40 CFR Part 68 are addressed in General Condition 6.C of the revised permit.

13.2 Stratospheric Ozone Protection

Stratospheric Ozone Protection requirements associated with 40 CFR Part 82 are potentially applicable to NHGC. These requirements are addressed in General Condition 6.D of the revised permit.

14. NONAPPLICABLE REQUIREMENTS

14.1 NSPS Subpart Da

NSPS Subpart Da contains Standards of Performance for Electric Utility Steam Generating Units meeting specified applicability criteria. The NHGC combined cycle unit heat recovery steam generators (HRSGs) are not equipped with supplemental duct firing. Therefore, in accordance with 40 CFR 60.40Da(b), NSPS Subpart Da is not applicable to NHGC.

14.2 NSPS Subpart KKKK

40 CFR 60 Subpart KKKK, NSPS for new combustion turbines, was promulgated on July 6, 2006 and applies to affected facilities which commence construction, modification or reconstruction after February 18, 2005. Because NHGC was constructed prior to this date and has not been re-constructed or "modified" subsequent to the NSPS applicability date, NSPS Subpart KKKK is not applicable.

14.3 MACT Subpart YYYY

National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines were promulgated on March 5, 2004 at 40 CFR 63 Subpart YYYY (§§63.6080 – 63.6175).[6] The standards are applicable only to new or reconstructed units, and not existing units. Regardless, as documented herein, NHGC is no a major source of HAP emissions. Therefore, 40 CFR 63 Subpart YYYY is not applicable.

[6] Note that on August 18, 2004 EPA issued a stay on the effectiveness of the standard for two subcategories, lean premix gas-fired turbines and diffusion flame gas-fired turbines pending potential delisting.

14.4 County Rule 322

County Rule 322 applies to power plant operations for which construction commenced prior to May 10, 1996 per §102. NHGC was constructed after that date; therefore, Rule 322 is not applicable.

14.5 County Rule 323

County Rule 323 applies to each stationary gas turbine with a heat input at peak load equal to or greater than 2.9 Megawatts (MW) and each steam generating unit that has a maximum design rated heat input capacity of greater than 10 million Btu per hour or 2.9 MW. However, Rule 323, Section 103.7, provides an exemption for combustion equipment used in power plant operations for the purpose of supplying greater than one-third of the electricity to any utility power distribution system for sale. NHGC is operated for the purpose of providing electricity to a distribution system and is therefore exempt from Rule 323.

14.6 County Rule 245

County Rule 245, Continuous Source Emission Monitoring, does not apply to any source which is subject to a New Source Performance Standard (Section 306.1). The NHGC combined cycle units are subject to NSPS Subpart GG and are therefore not subject to Rule 245.

15. STREAMLINING

NSPS Subpart GG (incorporated by reference at County Rule 360 §301.40) applies to the NHGC combined cycle units. The standard contains NOx and SO2 emission limitations and associated monitoring, recordkeeping and reporting.

The applicable NSPS NOx emission limit is calculated based on following equation under §60.332(a)(1):

$STD = 0.0075 \times (14.4/Y) + F$

Where:
STD = the allowable ISO corrected NOx concentration (% by volume at 15% oxygen, dry basis)
Y = manufacturers rated heat rate at rated load (kilojoules per watt hour)
F = optional allowance for fuel-bound nitrogen.

For the NHGC combustion turbines, $Y \approx 9.6$ (2,292.2 GJ/240 MW), therefore STD = 0.01125 %, or 112 ppm @ 15 % oxygen.

The applicable NOx BACT limitation for the NHGC combined cycle units is 2.5 ppmvd, corrected to 15 percent oxygen on a 3-hour rolling average. This limit is far more stringent than the applicable NSPS limit. Therefore, the BACT and NSPS NOx limitations were streamlined as part of the original PSD/Title V permit. The NSPS NOx limitation was subsumed by the more stringent BACT limitation.

The applicable NSPS SO_2 limitation found under §60.333 is 0.015 percent SO_2 by volume at 15 percent oxygen and on a dry basis or fuel (natural gas) limited to total sulfur content of 0.8 percent by weight (8000 ppmw). The applicable SO_2 BACT limitation for the NHGC combined cycle units

includes a natural gas total sulfur limitation of ≤ 0.0075 gr/scf. Assuming a natural gas density of 0.0441 lb/scf, this equates to 0.0024 percent or 24.3 ppmv. This fuel sulfur limit is far more stringent than the applicable NSPS requirement. Therefore, the BACT and NSPS SO_2 fuel sulfur limitations were streamlined as part of the original PSD/Title V permit. The NSPS SO_2 (fuel sulfur) limitation was subsumed by the more stringent BACT limitation.

In accordance with EPA's White Paper Number 2 for Improved Implementation of the Part 70 Operating Permits Program, "monitoring, recordkeeping, and reporting requirements associated with the most stringent emissions requirement are presumed appropriate for use with the streamlined emissions limit, unless reliance on that monitoring would diminish the ability to assure compliance with the streamlined requirement." The monitoring, recordkeeping, and reporting requirements contained in the revised NHGC permit associated with the most stringent (BACT) NOx and SO_2 limitations meet this presumption. CEMS meeting the requirements of 40 CFR Part 75 are used for NOx monitoring. SO_2 (fuel sulfur content) monitoring is in accordance with the custom fuel monitoring schedule originally implemented pursuant to NSPS Subpart GG. Recordkeeping and reporting requirements for NOx and SO_2 contained in the revised permit are at least as stringent as those required by NSPS and meet EPA streamlining criteria.

16. TESTING

Rule 270 contains performance and compliance testing requirements and establishes requirements for testing criteria, conditions, and reporting of test results. Performance testing requirements are specified in Section 22 of the revised permit. Several changes have been made (initiated by MCAQD) as noted in Section 4.9 of this TSD.

County Rule 200 Section 309 has granted the Control Officer the authority to require emissions testing if other sources of information are determined to be inadequate and certain other findings are made. The Control Officer has determined that the information available is not adequate. In addition, the Control Officer has determined that:

a. The facility emits NOx, CO, PM-10, VOC, ammonia, and HAPs. The USEPA has determined that exposure to these pollutant can adversely affect human health.

b. The test methods to be used are as follows:

    In accordance with CEMS RATA requirements for NOx
    In accordance with CEMS RATA requirements for CO
    EPA Test Method 5 and 202 for PM-10
    EPA Test Method 25A and 18 for VOC
    EPA CTM-027 or BAAQMD ST-1B for ammonia
    EPA CTM-037 for formaldehyde
    Compendium Method TO-15 for hexane

    These are EPA approved test methods and have been shown to produce scientifically acceptable results. Test methods for specific HAPs to be tested are included in the permit.

c. EPA Test Method has been shown to be technically feasible.

d. EPA Test Method has been shown to be reasonably accurate

e. After examining the estimated cost of the test, the Department believes that the cost of a stack-sampling test of the control device performance is reasonable to determine the effectiveness of the control device, to establish a baseline of emissions, to avoid potential fines, to establish parametric monitoring, to demonstrate adequacy of a maintenance program on equipment or controls, to provide emissions rate information for possible future PSD/NSR modeling requirements and to establish emissions rate information for environmental justice purposes.

Specific testing requirements for the combined cycle units and frequencies contained in the revised permit are shown in the table below.

Device to be Tested and Operating Conditions	Pollutant	Method	Frequency
Each Combined Cycle Unit	NOx	RATA testing in accordance with Conditions 20.A.(3)(b), (c), and (i)	In accordance with RATA requirements
	CO	RATA testing in accordance with Conditions 20.A.(3)(d) and (i)	In accordance with RATA requirements
Each Combined Cycle Unit when operating either at full load available on the day of testing or at an alternative load level established and approved as part of the pretest protocol	PM_{10}	Method 201A and 202	Annual
	VOC	Method 25A and 18	Annual
	Ammonia	EPA Conditional Test Method CTM-027 or Bay Area Air Quality Management District Source Test Procedure ST-1B	Every 3 years, and within 90 days following complete SCR catalyst replacement
Each Combined Cycle Unit when operating at full load available on the day of testing	Formaldehyde	CTM-037 "Method for Measurement of Formaldehyde Emissions From Natural Gas-Fired Stationary Sources - Acetyl Acetone Derivitization Method"	One time, within 180 days after permit issuance
	Hexane	Compendium Method TO-15	

17. PERMIT SHIELD

A permit shield was granted in the previous permit and has been included in this permit for specific applicable requirements. Appendix C (new) of the revised permit contains a listing of permit shield applicable requirements.

18. COMPLIANCE PLAN

NHGC is operating under an order of abatement by consent (OAC Number V-0007-06-GLB). Issuance of this permit signifies the expiration of the effective period of the order.

19. HAP IMPACT ANALYSIS

This significant TV permit revision/renewal does not include any proposed increase in potential HAP emissions and does not trigger the requirement to perform a HAP ambient impact analysis. HAP impacts were addressed in the initial NHGC PSD/Title V permitting process and subsequent minor permit modification issued on June 18, 2002 (addition of steam augmentation). Dispersion modeling analyses associated with these prior permit actions demonstrated that potential emissions from the facility would not cause exceedances of the Arizona Ambient Air Quality Guidelines (AAAQGs).

20. AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient impacts of criteria pollutants were addressed in the initial NHGC PSD/Title V permitting process and subsequent minor permit modifications issued on June 18, 2002 (addition of steam augmentation) and March 26, 2003 (increase in allowable lb/hr and lb/event CO emission rate for combined cycle units). Although this significant TV permit revision/renewal does not include any proposed increase in criteria pollutant potential emissions, revisions to SU/SD related permit conditions were reviewed for potential dispersion modeling demonstration implications. Changes to SU/SD conditions potentially impacting ambient impacts include the removal of lb/event limitations for NOx and VOC and removal of the annual hours of SU/SD operation limitation.

Three pollutants are affected by SU/SD operating conditions, NOx, CO, and VOC. The applicable averaging time for the NOx NAAQS is annual. The revised permit maintains the existing ton/year NOx limitations for the combined cycle units. Potential annual NOx emissions will not increase as a result of the permit revision; therefore, no new modeling demonstration was required. As an ozone precursor, NOx impacts were initially assessed at the boundary of the then Phoenix Metro Area Ozone Non-attainment Area. This analysis was also based on annual potential NOx emissions. Therefore, for the same reasons cited above, no new modeling demonstration was required.

CO NAAQS averaging periods are 1-hour and 8-hour. The revised permit maintains the existing lb/hour CO limitations for the combined cycle units. Therefore, there will be no increase in potential lb/hour CO emissions and no new modeling demonstration was required. MCAQD determined that 8-hour average CO emissions would potentially be affected by the removal of lb/event SU/SD emission limits. Maximum 8-hour average CO emissions used in the most recent SU/SD scenario NAAQS modeling demonstration relied upon the 3,000 lb CO/event limit.[7] Removal of this requirement would result in an increase in theoretical (allowable) emissions over an 8-hour period, potentially invalidating the prior modeling demonstration. Therefore, the CO lb/event limitation was maintained in Section 18.A, Table 3 of the revised draft permit.

[7] Ambient impact analysis contained in NHGC minor permit modification application dated February 27, 2003.

Appendix A
Technical Support Document (Ambient Air Quality Impact Report and Engineering Analysis)
for Original PSD/Title V Permit

APPENDICES:

New Harquahala Generating Company, LLC
HARQUAHALA GENERATING PROJECT
2530 North 491st Avenue
Tonopah, Arizona 85354
Permit Number V99-015
Incorporates Minor Mods 1-17-02-01, 9-27-02-01 and 11-22-02-01
January 4, 2007

In accordance with Maricopa County Air Pollution Control Rules and Regulations (Rules), Rule 210 § 302.2, all Conditions of this Permit are federally enforceable unless they are identified as being locally enforceable only. However, any Permit Condition identified as locally enforceable only will become federally enforceable if, during the term of this Permit, the underlying requirement becomes a requirement of the Clean Air Act (CAA) or any of the CAA's applicable requirements.

All federally enforceable terms and conditions of this Permit are enforceable by the Administrator of the United States Environmental Protection Agency (Administrator or Administrator of the USEPA hereafter) and citizens under Section 304 of the CAA.

Any cited regulatory paragraphs or section numbers refer to the version of the regulation that was in effect on the first date of public notice of the applicable Permit Condition unless specified otherwise.

GENERAL CONDITIONS:

1. AIR POLLUTION PROHIBITED: [County Rule 100 §301] [SIP Rule 3]

The Permittee shall not discharge from any source whatever into the atmosphere regulated air pollutants which exceed in quantity or concentration that specified and allowed in the County or State Implementation Plan (SIP) Rules, the Arizona Administrative Code (AAC) or the Arizona Revised Statutes (ARS), or which cause damage to property or unreasonably interfere with the comfortable enjoyment of life or property of a substantial part of a community, or obscure visibility, or which in any way degrade the quality of the ambient air below the standards established by the Maricopa County Board of Supervisors or the Director of the Arizona Department of Environmental Quality (ADEQ).

2. CIRCUMVENTION: [County Rule 100 §104] [40 CFR 60.12] [40 CFR 63.4(b)]

The Permittee shall not build, erect, install, or use any article, machine, equipment, condition, or any contrivance, the use of which, without resulting in a reduction in the total release of regulated air pollutants to the atmosphere, conceals or dilutes an emission which would otherwise constitute a violation of this Permit or any Rule or any emission limitation or standard. The Permittee shall not circumvent the requirements concerning dilution of regulated air pollutants by using more emission openings than is considered normal practice by the industry or activity in question.

3. CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS:

[County Rule 100 §401] [County Rule 210 §§301.7, 302.1e(1), 305.1c(1) & 305.1e]
Any application form, report, or compliance certification submitted under the County Rules or these Permit Conditions shall contain certification by a responsible official of truth, accuracy, and completeness of the application form or report as of the time of submittal. This certification and any other certification required under the County Rules or these Permit Conditions shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

4. COMPLIANCE:

A. COMPLIANCE REQUIRED:

1) The Permittee must comply with all conditions of this permit and with all applicable requirements of Arizona air quality statutes and the air quality rules. Compliance with permit terms and conditions does not relieve, modify, or otherwise affect the Permittee's duty to comply with all applicable requirements of Arizona air quality statutes and the Maricopa County Air Pollution Control Regulations. Any permit non-compliance is grounds for enforcement action; for a permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. Noncompliance with any federally enforceable requirement in this Permit constitutes a violation of the Act. [This Condition is federally enforceable if the condition or requirement itself is federally enforceable and only locally enforceable if the condition or requirement itself is locally enforceable only]

[County Rule 210 §§301.8b(4) & 302.1h(1)]

2) The Permittee shall halt or reduce the permitted activity in order to maintain compliance with applicable requirements of Federal laws, Arizona laws, the County Rules, or other conditions of this Permit.

[County Rule 210 §302.1h(2)]

3) For any major source operating in a nonattainment area for any pollutant(s) for which the source is classified as a major source, the source shall comply with reasonably available control technology (RACT) as defined in County Rule 100.

[County Rule 210 §302.1(h)(6)] [SIP Rule 220 §302.2]

4) For any major source operating in a nonattainment area designated as serious for PM_{10}, for which the source is classified as a major source for PM_{10}, the source shall comply with the best available control technology (BACT), as defined in County Rule 100.

[County Rule 210 §302.1(h)(7)]

B. COMPLIANCE CERTIFICATION REQUIREMENTS: [County Rule 210 §305.1d]
The Permittee shall file an annual compliance certification with the Control Officer and also with the Administrator of the USEPA. The report shall certify compliance with the terms and conditions contained in this Permit, including emission limitations, standards, or work practices. The certification shall be on a form supplied or approved by the Control Officer and shall include each of the following:

1) The identification of each term or condition of the permit that is the basis of the certification;
2) The compliance status;
3) Whether compliance was continuous or intermittent;

4) The method(s) used for determining the compliance status of the source, currently and over the reporting period; and
5) Other facts as the Control Officer may require to determine the compliance status of the source.

The annual certification shall be filed at the same time as the second semiannual monitoring report required by the Specific Condition section of these Permit Conditions and every 12 months thereafter. The Permittee shall submit the certification on a more frequent basis if the permit condition in the "Reporting" section of this permit requires a more frequent submittal.

B. COMPLIANCE CERTIFICATION REQUIREMENTS: [County Rule 210 §305.1d]

The Permittee shall file an annual compliance certification with the Control Officer and also with the Administrator of the USEPA. The report shall certify compliance with the terms and conditions contained in this Permit, including emission limitations, standards, or work practices. The certification shall be on a form supplied or approved by the Control Officer and shall include each of the following:

1) The identification of each term or condition of the permit that is the basis of the certification;
2) The compliance status;
3) Whether compliance was continuous or intermittent;
4) The method(s) used for determining the compliance status of the source, currently and over the reporting period; and
5) Other facts as the Control Officer may require to determine the compliance status of the source.

The annual certification shall be filed at the same time as the second semiannual monitoring report required by the Specific Condition section of these Permit Conditions and every 12 months thereafter.

C. COMPLIANCE PLAN: [County Rule 210 §305.1g]

Based on the certified information contained in the application for this Permit, the facility is in compliance with all applicable requirements in effect as of the first date of public notice of the proposed conditions for this Permit unless a compliance plan is included in the Specific Conditions section of this Permit. The Permittee shall continue to comply with all applicable requirements and shall meet any applicable requirements that may become effective during the term of this permit on a timely basis. [This Condition is federally enforceable if the applicable requirement itself is federally enforceable and only locally enforceable if the applicable requirement itself is locally enforceable only]

5. CONFIDENTIALITY CLAIMS:

Any records, reports or information obtained from the Permittee under the County Rules or this Permit shall be available to the public, unless the Permittee files a claim of confidentiality in accordance with ARS §49-487(c) which:

A. precisely identifies the information in the permit(s), records, or reports which is considered confidential, and

B. provides sufficient supporting information to allow the Control Officer to evaluate whether such information satisfies the requirements related to trade secrets or, if applicable, how the information, if disclosed, could cause substantial harm to the person's competitive position. The claim of confidentiality is subject to the determination by the Control Officer as to whether the claim satisfies the claim for trade secrets.

[County Rule 100 §402] [County Rule200 §411]

A claim of confidentiality shall not excuse the Permittee from providing any and all information required or requested by the Control Officer and shall not be a defense for failure to provide such information.

[County Rule 100 §402]

If the Permittee submits information with an application under a claim of confidentiality under ARS §49-487 and County Rule 200, the Permittee shall submit a copy of such information directly to the Administrator of the USEPA.

[County Rule 210 §301.5]

6. CONTINGENT REQUIREMENTS:

NOTE: This Permit Condition covers activities and processes addressed by the CAA which may or may not be present at the facility. This condition is intended to meet the requirements of both Section 504(a) of the 1990 Amendments to the CAA, which requires that Title V permits contain conditions necessary to assure compliance with applicable requirements of the Act as well as the Acid Rain provisions required to be in all Title V permits.

A. ACID RAIN: [County Rule 210 §§302.1b(2) & 302.1f] [County Rule 371 §301]

1). Where an applicable requirement of the Act is more stringent than an applicable requirement of regulations promulgated under Title IV of the CAA and incorporated under County Rule 371, both provisions shall be incorporated into this Permit and shall be enforceable by the Administrator.

2) The Permittee shall not allow emissions exceeding any allowances that the source lawfully holds under Title IV of the CAA or the regulations promulgated thereunder and incorporated under County Rule 371.

a) No permit revision shall be required for increases in emissions that are authorized by allowances acquired under the acid rain program and incorporated under County Rule 371, provided that such increases do not require a permit revision under any other applicable requirement.

b) No limit is placed on the number of allowances held by the Permittee. The Permittee may not, however, use allowances as a defense to non-compliance with any other applicable requirement.

c) Any such allowance shall be accounted for according to the procedures established in regulations promulgated under Title IV of the CAA.

d) All of the following prohibitions apply to any unit subject to the provisions of Title IV of the CAA and incorporated into this Permit under County Rule 371:

(1) Annual emissions of sulfur dioxide in excess of the number of allowances to emit sulfur dioxide held by the owners or operators of the unit or the designated representative of the owners or operators.

(2) Exceedances of applicable emission rates.

(3) The use of any allowance prior to the year for which it was allocated.
(4) Violation of any other provision of the permit.

B. ASBESTOS: [40 CFR 61, Subpart M] [County Rule 370 §301.8 - locally enforceable only]
The Permittee shall comply with the applicable requirements of Sections 61.145 through 61.147 and 61.150 of the National Emission Standard for Asbestos and County Rule 370 for all demolition and renovation projects.

C. RISK MANAGEMENT PLAN (RMP): [40 CFR 68]
Should this stationary source, as defined in 40 CFR 68.3, be subject to the accidental release prevention regulations in 40 CFR Part 68, then the Permittee shall submit an RMP by the date specified in 40 CFR Section 68.10 and shall certify compliance with the requirements of 40 CFR Part 68 as part of the annual compliance certification as required by 40 CFR Part 70. However, neither the RMP nor modifications to the RMP shall be considered to be a part of this Permit.

D. STRATOSPHERIC OZONE PROTECTION: [40 CFR 82 Subparts E, F, and G]
If applicable, the Permittee shall follow the requirements of 40 CFR 82.106 through 82.124 with respect to the labeling of products using ozone depleting substances.

If applicable, the Permittee shall comply with all of the following requirements with respect to recycling and emissions reductions:
1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices under 40 CFR 82.156.
2) Equipment used during maintenance, service, repair, or disposal of appliances must meet the standards for recycling and recovery equipment in accordance with 40 CFR 82.158.
3) Persons performing maintenance, service, repair, or disposal of appliances must be certified by a certified technician under 40 CFR 82.161.

If applicable, the Permittee shall follow the requirements of 40CFR 82 Subpart G, including all Appendices, with respect to the safe alternatives policy on the acceptability of substitutes for ozone-depleting compounds.

7. DUTY TO SUPPLEMENT OR CORRECT APPLICATION: [County Rule 210 §301.6]
If the Permittee fails to submit any relevant facts or has submitted incorrect information in a permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. In addition, the Permittee shall provide additional information as necessary to address any requirements that become applicable to the source after the date it filed a complete application but prior to release of a proposed permit.

8. EMERGENCY EPISODES: [County Rule 600 §302] [SIP Rule 600 §302]
If an air pollution alert, warning, or emergency has been declared, the Permittee shall comply with any applicable requirements of County Rule 600 §302.

9. EMERGENCY PROVISIONS: [County Rule 130 §§201 & 402]
An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, that require immediate corrective action to

restore normal operation, and that cause the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

An emergency constitutes an affirmative defense to an action brought for noncompliance with the technology-based emission limitations if the requirements of this Permit Condition are met.

The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

A. An emergency occurred and that the Permittee can identify the cause or causes of the emergency;
B. At the time of the emergency, the permitted source was being properly operated;
C. During the period of the emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in this permit; and
D. The Permittee as soon as possible telephoned the Control Officer, giving notice of the emergency, and submitted notice of the emergency to the Control Officer by certified mail, facsimile, or hand delivery within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice fulfills the requirement of County Rule 210 §302.1.e(2) with respect to deviation reporting. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

This provision is in addition to any emergency or upset provision contained in any applicable requirement.

10. EXCESS EMISSIONS: [County Rule 140 §§103, 400]

NOTE: There are reporting requirements associated with excess emissions. These requirements are contained in the Reporting section of the General Permit Conditions in a subparagraph called Excess Emissions. The definition of excess emissions can be found in County Rule 100 §200.

A. Exemptions: The excess emissions provisions of this Permit Condition do not apply to the following standards and limitations:

1) Promulgated pursuant to Section 111 (Standards Of Performance for New Stationary Sources) of the Clean Air Act (Act) or Section 112 (National Emission Standards For Hazardous Air Pollutants) of the Act;
2) Promulgated pursuant to Title IV (Acid Deposition Control) of the Act or the regulations promulgated thereunder and incorporated under Rule 371 (Acid Rain) of these rules or Title VI (Stratospheric Ozone Protection) of the Act;
3) Contained in any Prevention Of Significant Deterioration (PSD) or New Source Review (NSR) permit issued by the Environmental Protection Agency (EPA);
4) Included in a permit to meet the requirements of Rule 240 (Permit Requirements For New Major Sources And Major Modifications To Existing Major Sources), Subsection 308.1(e) (Permit Requirements For Sources Located In Attainment And Unclassified Areas) of these rules.

B. Affirmative Defense For Malfunctions: Emissions in excess of an applicable emission limitation due to malfunction shall constitute a violation. The owner and/or operator of a source with emissions in excess of an applicable emission limitation due to malfunction has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the owner and/or operator of the source has complied with the excess emissions reporting requirements of these Permit Conditions and has demonstrated all of the following:

1) The excess emissions resulted from a sudden and unavoidable breakdown of the process equipment or the air pollution control equipment beyond the reasonable control of the operator;
2) The source's air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;
3) If repairs were required, the repairs were made in an expeditious fashion when the applicable emission limitations were being exceeded. Off-shift labor and overtime were utilized where practicable to ensure that the repairs were made as expeditiously as possible. If off-shift labor and overtime were not utilized, then the owner and/or operator satisfactorily demonstrated that such measures were impractical;
4) The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;
5) All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
6) The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;
7) During the period of excess emissions, there were no exceedances of the relevant ambient air quality standards established in County Rule 510 that could be attributed to the emitting source;
8) The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned, and could not have been avoided by better operations and maintenance practices;
9) All emissions monitoring systems were kept in operation, if at all practicable; and
10) The owner's and/or operator's actions in response to the excess emissions were documented by contemporaneous records.

C. Affirmative Defense For Startup And Shutdown:

1) Except as provided in paragraph 2) below, and unless otherwise provided for in the applicable requirement, emissions in excess of an applicable emission limitation due to startup and shutdown shall constitute a violation. The owner and/or operator of a source with emissions in excess of an applicable emission limitation due to startup and shutdown has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the owner and/or operator of the source has complied with the excess emissions reporting requirements of these Permit Conditions and has demonstrated all of the following:
    a. The excess emissions could not have been prevented through careful and prudent planning and design;

b. If the excess emissions were the result of a bypass of control equipment, the bypass was unavoidable to prevent loss of life, personal injury, or severe damage to air pollution control equipment, production equipment, or other property;
c. The source's air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;
d. The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable, during periods of such emissions;
e. All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
f. During the period of excess emissions, there were no exceedances of the relevant ambient air quality standards established in County Rule 510 (Air Quality Standards) that could be attributed to the emitting source;
g. All emissions monitoring systems were kept in operation, if at all practicable; and
h. The owner's and/or operator's actions in response to the excess emissions were documented by contemporaneous records.

2) If excess emissions occur due to a malfunction during routine startup and shutdown, then those instances shall be treated as other malfunctions subject to paragraph A. of this Permit Condition.

D. Affirmative Defense For Malfunctions During Scheduled Maintenance: If excess emissions occur due to malfunction during scheduled maintenance, then those instances will be treated as other malfunctions subject to paragraph B. of this Permit Condition.

E. Demonstration Of Reasonable And Practicable Measures: For an affirmative defense under paragraphs A and B of this Permit Condition, the owner and/or operator of the source shall demonstrate, through submission of the data and information required by this Permit Condition and the excess emissions reporting requirements of these Permit Conditions, that all reasonable and practicable measures within the owner's and/or operator's control were implemented to prevent the occurrence of the excess emissions.

11. FEES: [County Rule 200 §409] [County Rule 210 §§302.1i & 401]
The Permittee shall pay fees to the Control Officer under ARS 49-480(D) and County Rule 280.

12. MODELING: [County Rule 200 §407] [locally enforceable only]
Where the Control Officer requires the Permittee to perform air quality impact modeling, the Permittee shall perform the modeling in a manner consistent with the "Guideline on Air Quality Models (Revised)" (EPA-450/2-78-027R, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. 27711, July 1986) and "Supplement B to the Guideline on Air Quality Models" (U.S. Environmental Protection Agency, September 1990). Both documents shall be referred to hereinafter as "Guideline", and are adopted by reference. Where the person can demonstrate that an air quality impact model specified in the guideline is inappropriate, the model may be modified or another model substituted if found to be acceptable to the Control Officer.

13. MONITORING / TESTING:

A. The Permittee shall monitor, sample, or perform other studies to quantify emissions of regulated air pollutants or levels of air pollution that may reasonably be attributable to the facility if required to do so by the Control Officer, either by Permit or by order in accordance with County Rule 200 §309.

[County Rule 200 §309] [SIP Rule 41]

B. Except as otherwise specified in these Permit Conditions or by the Control Officer, the Permittee shall conduct required testing used to determine compliance with standards or permit conditions established under the County or SIP Rules or these Permit Conditions in accordance with County Rule 270 and the applicable testing procedures contained in the applicable Rule, the Arizona Testing Manual for Air Pollutant Emissions or other approved USEPA test methods.

[County Rule 200 §408] [County Rule 210 §302.1.c] [County Rule 270 §§300 & 400] [SIP Rule 27]

C. The owner or operator of a permitted source shall provide, or cause to be provided, performance testing facilities as follows:

1) Sampling ports adequate for test methods applicable to such source.
2) Safe sampling platform(s).
3) Safe access to sampling platforms(s).
4) Utilities for sampling and testing equipment.

[County Rule 270 §405] [SIP Rule 42]

14. PERMITS:

A. BASIC: [County Rule 210 §302.1h(3)]

This Permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any Permit Condition.

B. DUST CONTROL PLAN REQUIREMENTS:

(NOTE: If the Permittee engages in or allows any routine dust generating activities at the facility, the Permittee needs to have the routine dust generating activity covered as part of this Permit. Nonroutine activities, such as construction, require a separate Earthmoving Permit that must be obtained from the Control Officer before the activity may begin.)

1) The Permittee shall submit to the Control Officer a Dust Control Plan with any permit application that involves earthmoving operations with a disturbed surface area that equals or exceeds 0.1 acre, including both of the following situations:
   a) When submitting an application for an earthmoving permit involving earth moving operations that would equal or exceed 0.1 acre, and
   b) Before commencing any routine dust generating operation at the facility.

[County Rule 310 §303.1] [SIP Rule 310 §303.1]

2) A Dust Control Plan shall not be required to play on a ball field and/or for landscape maintenance. For the purpose of this Permit Condition, landscape maintenance does not include grading, trenching, nor any other mechanized surface disturbing activities.

[County Rule 310 §303.4] [SIP Rule 310 §303.4]

3) Any Dust Control Plan shall, at a minimum, contain all the information described in Sections 303.1, 303.3 and 304 of Rule 310.

[County Rule 310 §§303.1, 303.3 & 304] [SIP Rule 310 §§303.1, 303.3 & 304]

4) Regardless of whether an approved Dust Control Plan is in place or not, the Permittee is still subject to all requirements of Rule 310 at all times.

[County Rule 310 §303.2] [SIP Rule 310 §303.2]

C. PERMITS AND PERMIT CHANGES, AMENDMENTS AND REVISIONS:

1) The Permittee shall comply with the Administrative Requirements of Section 400 of County Rule 210 for all changes, amendments and revisions at the facility for any source subject to regulation under County Rule 200, shall comply with all required time frames, and shall obtain any required preapproval from the Control Officer before making changes. All applications shall be filed in the manner and form prescribed by the Control Officer. The application shall contain all the information necessary to enable the Control Officer to make the determination to grant or to deny a permit or permit revision including information listed in County Rule 200 §308 and County Rule 210 §§301 & 302.3.

[County Rule 200 §§301 & 308] [County Rule 210 §§301.4a, b, c, & 400]

2) The Permittee shall supply a complete copy of each application for a permit, a minor permit revision, or a significant permit revision directly to the Administrator of the USEPA. The Control Officer may require the application information to be submitted in a computer-readable format compatible with the Administrator's national database management system.

[County Rule 210 §§303.1a, 303.2, 405.4, & 406.4]

3) While processing an application, the Control Officer may require the applicant to provide additional information and may set a reasonable deadline for a response.

[County Rule 210 §301.4f]

4) No permit revision shall be required under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.

[County Rule 210 §302.1j]

D. POSTING:

1) The Permittee shall keep a complete permit clearly visible and accessible on the site where the equipment is installed.

[County Rule 200 §311]

2) If a Dust Control Plan, as required by Rule 310, has been approved by the Control Officer, the Permittee shall post a copy of the approved Dust Control Plan in a

conspicuous location at the work site, within on-site equipment, or in an on-site vehicle, or shall otherwise keep a copy of the Dust Control Plan available on site at all times.

[County Rule 310 §401] [SIP Rule 310 §401]

E. PROHIBITION ON PERMIT MODIFICATION: [County Rule 200 §310]

The Permittee shall not willfully deface, alter, forge, counterfeit, or falsify this permit.

F. RENEWAL:

1) The Permittee shall submit an application for the renewal of this Permit in a timely and complete manner. For purposes of permit renewal, a timely application is one that is submitted at least six months, but not more than 18 months, prior to the date of permit expiration. A complete application shall contain all of the information required by the County Rules including Rule 200 §308 and Rule 210 §§301 & 302.3.

[County Rule 210 §§301.2a, 301.4a, b, c, d, h & 302.3]

2) The Permittee shall file all permit applications in the manner and form prescribed by the Control Officer. To apply for a permit renewal, the Permittee shall complete the "Standard Permit Application Form" and shall supply all information, including the information required by the "Filing Instructions" as shown in Appendix B of the County Rules, which is necessary to enable the Control Officer to make the determination to grant or to deny a permit which shall contain such terms and conditions as the Control Officer deems necessary to assure a source's compliance with the requirements of the CAA, ARS and County Rules.

[County Rule 200 §§308 & 309] [County Rule 210 §301.1]

3) The Control Officer may require the Permittee to provide additional information and may set a reasonable deadline for a response.

[County Rule 210 §301.4f]

4) If the Permittee submits a timely and complete application for a permit renewal, but the Control Officer has failed to issue or deny the renewal permit before the end of the term of the previous permit, then the permit shall not expire until the renewal permit has been issued or denied. This protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit, by the deadline specified by the Control Officer, any additional information identified as being needed to process the application.

[County Rule 200 §403.2] [County Rule 210 §§301.4f & 301.9]

G. REVISION / REOPENING / REVOCATION:

1) This permit shall be reopened and revised to incorporate additional applicable requirements adopted by the Administrator pursuant to the CAA that become applicable to the facility if this permit has a remaining permit term of three or more years. No such reopening is required if the effective date of the requirement is later than the date on which this Permit is due to expire unless the original permit or any of its terms have been extended pursuant to Rule 200 §403.2.

[County Rules 200 §402.1]

Any permit revision required under this Permit Condition, 14.G.1, shall reopen the entire permit and shall comply with provisions in County Rule 200 for permit renewal *(Note:*

this includes a facility wide application and public comment on the entire permit) and shall reset the five year permit term.

[County Rules 200 §402.1a(1) & 210 §302.5]

2) This permit shall be reopened and revised under any of the following circumstances:
   a) Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Title V permit.
   b) The Control Officer or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
   c) The Control Officer or the Administrator determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

   Proceedings to reopen and issue a permit under this Permit Condition, 14.G.2, shall follow the same procedures as apply to initial permit issuance and shall effect only those parts of the Permit for which cause to reopen exists.

   [County Rule 200 §402.1]

3) This permit shall be reopened by the Control Officer and any permit shield revised, when it is determined that standards or conditions in the permit are based on incorrect information provided by the applicant.

   [County Rule 210 §407.3]

4) This Permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Permit revision, revocation and reissuance, or termination or of a notification of planned changes or anticipated noncompliance does not stay any Permit Condition.

   [County Rule 210 §302.1h(3)]

H. REVISION UNDER A FEDERAL HAZARDOUS AIR POLLUTANT STANDARD:

[County Rule 210 §301.2c] [locally enforceable only]

If the Permittee becomes subject to a standard promulgated by the Administrator under Section 112(d) of the CAA, the Permittee shall, within 12 months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

I. REQUIREMENTS FOR A PERMIT:

1) Air Quality Permit: Except as noted under the provisions in Sections 403 and 405 of County Rule 210, no source may operate after the time that it is required to submit a timely and complete application, except in compliance with a permit issued under County Rule 210. Permit expiration terminates the Permittee's right to operate. However, if a source submits a timely and complete application, as defi`ned in County Rule 210 §301, for permit issuance, revision, or renewal, the source's failure to have a permit is not a violation of the County Rules until the Control Officer takes final action on the application. The Source's ability to operate without a permit as set forth in this paragraph

shall be in effect from the date the application is determined to be complete until the final permit is issued. This protection shall cease to apply if, subsequent to the completeness determination, the applicant fails to submit, by the deadline specified in writing by the Control Officer, any additional information identified as being needed to process the application. If a source submits a timely and complete application for a permit renewal, but the Control Officer has failed to issue or deny the renewal permit before the end of the term of the previous permit, then the permit shall not expire until the permit renewal has been issued or denied.

[County Rule 210 §301.9]

2) Earthmoving Permit:
(NOTE: If the Permittee engages in or allows any routine dust generating activities at the facility, the Permittee needs to have the routine dust generating activity covered as part of this Permit. Non-routine activities, such as construction, require a separate Earthmoving Permit that must be obtained from the Control Officer before the activity may begin.)
The Permittee shall not cause, commence, suffer, allow, or engage in any earthmoving operation that disturbs a total surface area of 0.10 acre or more without first obtaining a permit from the Control Officer. Permits shall not be required for earthmoving operations for emergency repair of utilities, paved roads, unpaved roads, shoulders, and/or alleys.

[County Rule 200 §305]

3) Burn Permit: The Permittee shall obtain a Permit To Burn from the Control Officer before conducting any open outdoor fire except for the activities listed in County Rule 314 §§302.1 and 302.2.

[County Rule 314] [County Rule 200 §306] [SIP Rule 314]

J. RIGHTS AND PRIVILEGES: [County Rule 210 §302.1h (4)]
This Permit does not convey any property rights nor exclusive privilege of any sort.

K. SEVERABILITY: [County Rule 210 §302.1g]
The provisions of this Permit are severable, and, if any provision of this Permit is held invalid, the remainder of this Permit shall not be affected thereby.

L. SCOPE:
The issuance of any permit or permit revision shall not relieve the Permittee from compliance with any Federal laws, Arizona laws, or the County or SIP Rules, nor does any other law, regulation or permit relieve the Permittee from obtaining a permit or permit revision required under the County Rules.

[County Rule 200 §308]

Nothing in this permit shall alter or affect the following:
1) The provisions of Section 303 of the Act (Emergency Orders), including the authority of the Administrator of the USEPA under that section.
2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance.

3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Act.
4) The ability of the Administrator of the USEPA or of the Control Officer to obtain information from the Permittee under Section 114 of the Act, or any provision of State law.
5) The authority of the Control Officer to require compliance with new applicable requirements adopted after the permit is issued. [locally enforceable only]

[County Rule 210 §407.2]

M. TERM OF PERMIT: [County Rule 210 §§302.1a & 402]

This Permit shall remain in effect for no more than 5 years from the date of issuance.

N. TRANSFER: [County Rule 200 §404]

Except as provided in ARS §49-429 and County Rule 200, this permit may be transferred to another person if the Permittee gives notice to the Control Officer in writing at least 30 days before the proposed transfer and complies with the permit transfer requirements of County Rule 200 and the administrative permit amendment procedures under County Rule 210.

15. RECORDKEEPING:

A. RECORDS REQUIRED: [County Rule 100 §501] [County Rule 310 §502] [SIP Rule 40 A]

The Permittee shall maintain records of all emissions testing and monitoring, records detailing all malfunctions which may cause any applicable emission limitation to be exceeded, records detailing the implementation of approved control plans and compliance schedules, records required as a condition of any permit, records of materials used or produced, and any other records relating to the emission of air contaminants which may be requested by the Control Officer.

B. RETENTION OF RECORDS:

Unless a longer time frame is specified by these Permit Conditions, information and records required by applicable requirements and copies of summarizing reports recorded by the Permittee and submitted to the Control Officer shall be retained by the Permittee for 5 years after the date on which the information is recorded or the report is submitted

[County Rule 100 §504] [SIP Rule 40 C]

The Permittee shall retain records of all required monitoring data and support information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

[County Rule 210 §§302.1d(2)]

C. MONITORING RECORDS: [County Rule 210 §§302.1d(1) & 305.1b]

Records of any monitoring required by this Permit shall include the following:
1) The date, place as defined in the permit, and time of sampling or measurements;
2) The date(s) analyses were performed;
3) The name of the company or entity that performed the analysis;

4) The analytical techniques or methods used;
5) The results of such analysis; and
6) The operating conditions as existing at the time of sampling or measurement.

D. RIGHT OF INSPECTION OF RECORDS: [County Rule 100 §106] [SIP Rule 40 D]
When the Control Officer has reasonable cause to believe that the Permittee has violated or is in violation of any provision of County Rule 100 or any County Rule adopted under County Rule 100, or any requirement of this permit, the Control Officer may request, in writing, that the Permittee produce all existing books, records, and other documents evidencing tests, inspections, or studies which may reasonably relate to compliance or noncompliance with County Rules adopted under County Rule 100. No person shall fail nor refuse to produce all existing documents required in such written request by the Control Officer.

16. REPORTING:
NOTE: See the Permit Condition titled Certification Of Truth, Accuracy and Completeness in conjunction with reporting requirements.

A. ANNUAL EMISSION INVENTORY REPORT: [County Rule 100 §505] [SIP Rule 40 B]
Upon request of the Control Officer and as directed by the Control Officer, the Permittee shall complete and shall submit to the Control Officer an annual emissions inventory report. The report is due by April 30, or 90 days after the Control Officer makes the inventory form(s) available, whichever occurs later.

The annual emissions inventory report shall be in the format provided by the Control Officer.

The Control Officer may require submittal of supplemental emissions inventory information forms for air contaminants under ARS §49-476.01, ARS §49-480.03 and ARS §49-480.04.

B. DATA REPORTING: [County Rule 100 §502]
When requested by the Control Officer, the Permittee shall furnish to the Maricopa County Air Quality Division (Division hereafter) information to locate and classify air contaminant sources according to type, level, duration, frequency, and other characteristics of emissions and such other information as may be necessary. This information shall be sufficient to evaluate the effect on air quality and compliance with the County or SIP Rules. The Permittee may subsequently be required to submit annually, or at such intervals specified by the Control Officer, reports detailing any changes in the nature of the source since the previous report and the total annual quantities of materials used or air contaminants emitted.

C. DEVIATION REPORTING: [County Rule 210 §§302.1e & 305.1c]
The Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions. Unless specified otherwise elsewhere in these Permit Conditions, an upset for the purposes of this Permit Condition shall be defined as the operation of any process, equipment or air pollution control device outside of either its normal design criteria or operating conditions specified in this Permit and which results in an exceedance of any applicable emission limitation or standard. The Permittee shall submit the report to the Control Officer within 2 working days from knowledge of the deviation. The report shall contain a description of the probable cause of such deviations and any corrective actions or

preventive measures taken. In addition, the Permittee shall report within a reasonable time of any long-term corrective actions or preventative actions taken as the result of any deviations from permit requirements.

All instances of deviations from the requirements of this Permit shall also be clearly identified in the semiannual monitoring reports required in the Specific Condition section of these Permit Conditions.

D. EMERGENCY REPORTING: [County Rule 130 §402.4]

(NOTE: Emergency Reporting is one of the special requirements which must be met by a Permittee wishing to claim an affirmative defense under the emergency provisions of County Rule 130. These provisions are listed earlier in these General Conditions in the section titled "Emergency Provisions". Since it is a form of deviation reporting, the filing of an emergency report also satisfies the requirement of County Rule 210 to file a deviation report.)

The Permittee shall, as soon as possible, telephone the Control Officer giving notice of the emergency, and submitted notice of the emergency to the Control Officer by certified mail, facsimile, or hand delivery within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

E. EMISSION STATEMENTS REQUIRED AS STATED IN THE ACT:

[County Rule 100 §503]

Upon request of the Control Officer and as directed by the Control Officer, the Permittee shall provide the Control Officer with an emission statement, in such form as the Control Officer prescribes, showing measured actual emissions or estimated actual emissions of NO_x and volatile organic compounds (VOC) from that source. At a minimum, the emission statement shall contain all information contained in the "Guidance on Emission Statements" document as described in the USEPA's Aerometric Information Retrieval System (AIRS) Fixed Format Report (AFP 644). The statement shall contain emissions for the time period specified by the Control Officer. Statements shall be submitted annually.

F. EXCESS EMISSIONS REPORTING: [County Rule 140 §500] [locally enforceable only]

(NOTE: This reporting subsection is associated with the requirements listed earlier in these General Conditions in the section titled "Excess Emissions".)

1) The owner and/or operator of any source shall report to the Control Officer any emissions in excess of the limits established by the County or SIP Rules or by these Permit Conditions. The report shall be in two parts as specified below:
   a) Notification by telephone or facsimile within 24 hours of the time when the owner and/or operator first learned of the occurrence of excess emissions that includes all available information from paragraph 2) of this Permit Condition.
   b) Detailed written notification by submission of an excess emissions report within 72 hours of the notification required by paragraph 1) a) of this Permit Condition.

2) The excess emissions report shall contain the following information:
   a) The identity of each stack or other emission point where the excess emissions occurred;

b) The magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions;
c) The time and duration or expected duration of the excess emissions;
d) The identity of the equipment from which the excess emissions emanated;
e) The nature and cause of such emissions;
f) The steps taken, if the excess emissions were the result of a malfunction, to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions;
g) The steps that were or are being taken to limit the excess emissions; and
h) If this Permit contains procedures governing source operation during periods of startup or malfunction and the excess emissions resulted from startup or malfunction, a list of the steps taken to comply with the Permit procedures.

3) In the case of continuous or recurring excess emissions, the notification requirements of this Permit Condition shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in the notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period or changes in the nature of the emissions as originally reported shall require additional notification pursuant to paragraphs 1) and 2) of this Permit Condition.

G. OTHER REPORTING: [County Rule 210 §302.1h(5)]

The Permittee shall furnish to the Control Officer, within a reasonable time, any information that the Control Officer may request in writing to determine whether cause exists for revising, revoking and reissuing this permit, or terminating this permit, or to determine compliance with this permit. Upon request, the Permittee shall also furnish to the Control Officer copies of records required to be kept by this Permit. For information claimed to be confidential, the Permittee shall furnish a copy of such records directly to the Administrator of the USEPA along with a claim of confidentiality as covered elsewhere in these Permit Conditions.

17. RIGHT TO ENTRY AND INSPECTION OF PREMISES:

The Control Officer, during reasonable hours, for the purpose of enforcing and administering County Rules or any provision of ARS relating to the emission or control prescribed pursuant thereto, may enter every building, premises, or other place, except the interior of structures used as private residences. Every person is guilty of a petty offense under ARS §49-488 who in any way denies, obstructs or hampers such entrance or inspection that is lawfully authorized by warrant.

[County Rule 100 §105]

The Permittee shall allow the Control Officer or his authorized representative, upon presentation of proper credentials and other documents as may be required by law, to:

A. Enter upon the Permittee's premises where a source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;

[County Rule 210 §305.1f] [SIP Rule 43]

B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

[County Rule 210 §305.1f] [SIP Rule 43]

C. Inspect, at reasonable times, any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
[County Rule 210 §305.1f] [SIP Rule 43]

D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and
[County Rule 210 §305.1f] [SIP Rule 43]

E. To record any inspection by use of written, electronic, magnetic, and photographic media.
[County Rule 210 §305.1f] [Locally enforceable only]

SPECIFIC CONDITIONS:

18. ALLOWABLE EMISSION LIMITS:

The allowable emission limits of these Permit Conditions are based upon the facility as currently permitted. They do not provide for facility changes or changes in the method of operation that would otherwise trigger applicable requirements including New Source Review, Prevention of Significant Deterioration or Best Available Control Technology.

A. EMISSION LIMITATIONS FOR COMBINED CYCLE UNITS:

The Permittee shall not cause, allow, or permit emissions from Combined Cycle Units CTG1, CTG2, and CTG3 to exceed the emission limits shown in Tables 1, 2, 3, and 4 below.

Table 1
Rolling Total Emission Limits

	Rolling 365-day Total Emission Limits (tons)		**Rolling 12-month Total Emission Limits (tons)**		
Device	**NOx**	**CO**	**SO_2**	**PM-10**	**VOC**
Combined Cycle Unit CTG1	108	192	23	97	34
Combined Cycle Unit CTG2	108	192	23	97	34
Combined Cycle Unit CTG3	108	192	23	97	34

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

Table 2
Hourly Emission Limits During Periods When a Combined Cycle Unit Operates in Conditions Other than Startup, Shutdown, or Tuning/Testing

	Emission Limits (pounds per hour, 1-hour average)				
Device	**NOx**	**CO**	**SO_2**	**PM-10**	**VOC**
Combined Cycle Unit CTG1	25.0	37.0	5.8	24.0	7.8
Combined Cycle Unit CTG2	25.0	37.0	5.8	24.0	7.8
Combined Cycle Unit CTG3	25.0	37.0	5.8	24.0	7.8

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

Table 3
Emission Limits for a Single Combined Cycle Unit During Periods of Startup, Shutdown, and Tuning/Testing

		Emission Limits			
		Pounds per hour, 1-hour average			Pounds per event
Device	**Condition**	**NOx**	**CO**	**VOC**	**CO**
Each Combined Cycle Unit (CTG1, CTG2 or CTG3)	Cold Start	220	2,300	440	3,000
	Warm/Hot Start/Shutdown	151	2,300	237	2,600
	Tuning/Testing	151	2,300	237	2,600

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

Table 4
Additional Concentration or Rate Emission Limits

	Emission Limits				
Device	**NOx**	**CO**	**PM-10 Total (Filterable plus Condensable)**	**VOC**	**Ammonia**
Each Combined Cycle Unit CTG1, CTG2 or CTG3 Exhaust	2.5 ppmvd corrected to 15% O_2 3-hour rolling average[1]	10 ppmvd corrected to 15% O_2 3-hour rolling average[1]	0.0143 lb/MMBtu 3-hour average	2.8 ppmvd corrected to 15% O_2 3-hour average[1]	10 ppmvd corrected to 15% O_2 24-hour average[2]

1) Not applicable during periods of startup, shutdown, and tuning/testing as defined in Condition 19.B.2,

2) As required by Condition 22.I, compliance shall be determined as the average of three separate test runs each not less than one hour in duration.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)] [County Rule 360 §301.40] [40 CFR 60.332(a)(1)]

B. EMISSION LIMITATIONS FOR COOLING TOWERS:

1) The Permittee shall not cause, allow, or permit emissions to exceed rolling total emission limits for Cooling Tower 1 and Cooling Tower 2 shown in Table 5.

Table 5
Rolling Total Emission Limits

	Rolling 12-month Total Emission Limits (tons)
Device	**PM-10**
Cooling Tower 1	3.1
Cooling Tower 2	3.1

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

C. EMISSION LIMITATIONS FOR THE FIREWATER PUMP ENGINE AND EMERGENCY GENERATOR:

The Permittee shall not discharge into the ambient air from either the Firewater Pump Engine or the Emergency Generator emissions that exceed 20 percent opacity.

[County Rule 324 §303] [locally enforceable only]

D. GENERALLY APPLICABLE EMISSION LIMITATIONS:

1) Offsite Sulfur Oxide Limits:
The Permittee shall not emit into the ambient air any sulfur oxide in such manner and amounts as to result in ground level concentrations at any place beyond the premises on which the source is located exceeding the limits shown in Table 6.

Table 6
Sulfur Oxide Ambient Concentration Limits

Concentration of Sulfur Dioxide (µg/m^3)	**Averaging Time (hours)**
850	1
250	24
120	72

[SIP Rule 32.F]

2) Particulate Matter Limits:

The Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel from any emissions unit in excess of the amounts calculated by the following equation:

$E = 1.02\ Q^{0.769}$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.
Q = the heat input in million Btu per hour.

[SIP Rule 31.H.1.a]

3) Opacity Limits:

a) The Permittee shall not discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20 percent opacity except as provided in County Rule 300, §302.2.

[County Rule 300 §§301, 302] [locally enforceable only]

b) Except as otherwise provided in Maricopa County Regulation I, Rule 4, Exceptions, the opacity of any plume or effluent from any source of emissions, other than uncombined water, shall not be greater than 40 percent opacity as determined by Reference Method 9 in the Arizona Testing Manual.

[SIP Rule 30]

19. OPERATIONAL REQUIREMENTS:

A. FACILITY-WIDE OPERATIONAL REQUIREMENTS:

1) Materials including, but not limited to, solvents or other volatile compounds, paints, acids, alkalies, pesticides, fertilizer and manure shall be processed, stored, used and transported in such a manner and by such means that they will not unreasonably evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices or equipment shall be mandatory.

[County Rule 320, §302] [SIP Rule 32.C]

2) Where a stack, vent or other outlet is at such a level that air contaminants are discharged to adjoining property, the Control Officer may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet to a degree that will adequately dilute, reduce or eliminate the discharge of air contaminants to adjoining property.

[County Rule 320 §303] [SIP Rule 32.D]

3) The Permittee shall not emit gaseous or odorous air contaminants from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.

[County Rule 320 §300] [SIP Rule 32.A]

B. OPERATIONAL REQUIREMENTS FOR COMBINED CYCLE UNITS:

1) Fuel Restriction
The Permittee shall combust only pipeline quality natural gas in Combined Cycle Units CGT1, CGT2, and CGT3. The total sulfur content of the pipeline quality natural gas shall not exceed 0.0075 grains per standard cubic foot over any averaging period and 0.005 grains per standard cubic foot calculated as a 12-month rolling average.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)] [County Rule 320 §305] [40 CFR 60.333(b)]

2) Startup, Shutdown, Testing and Tuning Operating Conditions

a) Startup is defined as the period between when a Combined Cycle Unit is initially started and fuel flow is indicated until Combustion Turbine generation increases above 50% of rated capacity and the fuel system confirms, via digital signal, "Final Mode" of operations has been established. Rated capacity means the combustion gas turbine's nameplate electrical power output capacity in megawatts (MW) adjusted to current inlet conditions. Cold startup is defined as a startup that occurs when the steam turbine rotor temperature is less than 302 degrees Fahrenheit (150 degrees Centigrade). Hot startup or warm startup is defined as a startup that occurs when the steam turbine rotor temperature is 302 degrees Fahrenheit (150 degrees Centigrade) or greater. For the purpose of emission limit applicability, the total duration of any Combined Cycle Unit startup event (cold, hot or warm startup) shall not exceed 5 hours, except that the Permittee is allowed up to 3 startup events per calendar year lasting longer than 5 hours but not to exceed 8 hours. Restart of a Combined Cycle Unit following a unit trip or aborted startup constitutes a new startup period.

b) Shutdown is defined as the period during a Combined Cycle Unit shutdown sequence beginning when the operator initiates the shutdown of the unit and the fuel system confirms, via digital signal, that the units is no longer operating in Final Mode operations and ending when all combustion has ceased. In the event of a unit trip or aborted startup, shutdown begins when the combustion turbine drops off Final Mode operations and ends when all combustion has ceased. Restart of a Combined Cycle Unit following a unit trip or aborted startup constitutes a new startup period.

c) Tuning and testing operations include, but are not limited to, periodic tuning of dry low-NOx (DLN) combustors and selective catalytic reduction (SCR) systems and generator certification testing. Tuning and testing operations subject to the emission limitations in Table 3 of Condition 18.A shall not exceed 50 hours per calendar year per Combined Cycle Unit. Periods of tuning and testing during which Combined Cycle Unit emissions do not exceed the applicable limitations in Tables 2 and 4 of Condition 18.A shall not be counted toward the 50 hour annual limit. No more than one Combined Cycle Unit shall be in tuning or testing mode at any time.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

3) At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the Combined Cycle Units including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Control Officer which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

[County Rule 360 §301.1] [40 CFR 60.11(d)]

4) Within 90 days following issuance of this permit, the Permittee shall develop, maintain on site, and follow a written startup and shutdown plan (SSP) for the Combined Cycle Units which includes manufacturer's recommended operating practices and other relevant information based on engineering evaluation and/or operating experience for startup and shutdown of the Combined Cycle Units and emission control systems. The SSP shall be designed to minimize air pollutant emissions during startup and shutdown events.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

C. OPERATIONAL REQUIREMENTS FOR THE SELECTIVE CATALYTIC REDUCTION EMISSION CONTROL SYSTEMS:

1) The Permittee shall install, operate, and maintain a Selective Catalytic Reduction (SCR) system as part of each Combined Cycle Unit.

2) The Permittee shall, at all times, maintain and comply with the Department-approved Operations and Maintenance (O&M) plan included in Appendix D of this Permit for each Combined Cycle Unit SCR system. The Permittee shall revise the O&M plan on an as needed basis or at the direction of the Control Officer. Any revisions to the O&M plan shall be submitted to the Department for approval.

3) The SCR control system shall be designed so it will not inject ammonia into the SCR system when the inlet temperature to the catalyst is less than the temperature specified in the SCR O&M plan.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

D. OPERATIONAL REQUIREMENTS FOR THE OXIDATION CATALYST EMISSION CONTROL SYSTEMS:

1) The Permittee shall install, operate, and maintain an Oxidation Catalyst system as part of each Combined Cycle Unit.

2) The Permittee shall, at all times, maintain and comply with the Department-approved Operations and Maintenance (O&M) plan included in Appendix D of this Permit for

each Combined Cycle Unit Oxidation Catalyst system. The Permittee shall revise the O&M plan on an as needed basis or at the direction of the Control Officer. Any revisions to the O&M plan shall be submitted to the Department for approval.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

E. OPERATIONAL REQUIREMENTS FOR THE COOLING TOWERS:

1) The cooling towers shall at all times be equipped and maintained with high efficiency drift eliminators certified by the cooling towers' vendor to achieve less than 0.0003 percent drift.

2) The total dissolved solids (TDS) content of the cooling water in the cooling towers shall not exceed 20,000 ppm.

[County Rule 240 §308.1a, d, e] [40 CFR 52.21(j)]

F. OPERATIONAL REQUIREMENTS FOR THE FIREWATER PUMP ENGINE AND EMERGENCY GENERATOR:

1) The Permittee shall not cause or allow any fuel to be combusted in the Firewater Pump Engine and Emergency Generator other than commercially available diesel fuel with sulfur content of 0.05 percent by weight or less.

2) The Permittee shall operate the Firewater Pump Engine only for emergency conditions or routine maintenance checks.

3) The Permittee shall operate the Emergency Generator only for emergency conditions or routine maintenance checks.

4) Operation of the Firewater Pump Engine shall not exceed 500 hours per consecutive 12-month period.

5) Operation of the Emergency Generator shall not exceed 500 hours per consecutive 12-month period.

[County Rule 240, §308.1a, d, e] [40 CFR 52.21(j)] [County Rule 324 §§301.1] [County Rule 210 §302.1b]

20. MONITORING AND RECORDKEEPING REQUIREMENTS:

A. MONITORING AND RECORDKEEPING REQUIREMENTS FOR THE COMBINED CYCLE UNITS:

1) The Permittee shall hourly monitor and record the hours of operation and operating mode (startup, shutdown, testing/tuning, or normal operation) of each Combined Cycle Unit; the Combustion Turbine exhaust temperature prior to entering the Selective Catalytic Reduction System; the Combustion Turbine exhaust temperature prior to entering the Oxidation Catalyst System; the amount of natural gas combusted in each of the Combined Cycle Units, and the electrical energy output of each Combustion Turbine.

[County Rule 210 §302.1c, d]

2) The Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the Combined Cycle Units; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

[40 CFR 60.7(b)]

3) Continuous Emissions Monitoring System (CEMS) and Continuous Monitoring System (CMS) Requirements

a) The Permittee shall install, calibrate, certify (as required by 40 CFR 75.20), maintain and operate CEMS with an automated data acquisition and handling system for measuring and recording emissions of NOx, CO, and diluent O_2 or CO_2 from each Combined Cycle Unit exhaust. NOx and CO emissions shall be recorded in parts per million by volume dry basis (ppmvd), pounds per million Btu (lb/MMBtu), and pounds per hour (lb/hr). Diluent O_2 or CO_2 shall be recorded in percent by volume. The CEMS shall be capable of monitoring concentrations and mass emissions during normal operations and during periods of startup, shutdown, and tuning/testing operations. Hourly average, rolling three-hour average, and rolling 365-day total values shall be continuously recorded.

b) For the NOx and O_2 or CO_2 diluent CEMS, the Permittee shall meet the requirements of 40 CFR Part 75, including but not limited to the following:

(1) 75.10 – General Monitoring Requirements;
(2) 75.12 – Specific Provisions for Monitoring NOx Emission Rate;
(3) Subpart C – Operation and Maintenance Requirements;
(4) Subpart D – Missing Data Substitution Procedures;
(5) Subpart F – Recordkeeping Requirements;
(6) Appendix A – Specifications and Test Procedures;
(7) Appendix B – Quality Assurance and Quality Control Procedures;
(8) Appendix C – Missing Data Estimation Procedures; and
(9) Appendix F – Conversion Procedures.

c) Notwithstanding the provisions of Condition 20.A.3.b, NOx CEMS meeting alternative performance specification or QA/QC exemption criteria in 40 CFR Part 75 shall meet the requirements of 40 CFR Part 60 as specified below:

(1) Calibration Error: Monitors with span values less than or equal to 50 ppm utilizing the alternative 5 ppm performance specification in 40 CFR Part 75 shall meet the Calibration Drift performance specification and QA/QC requirements of 40 CFR 60 Appendix B: Performance Specification 2 (PS-2) and Appendix F.

(2) Linearity: Monitors with a span values less than or equal to 30 ppm exempted from linearity check requirements under 40 CFR Part 75 and monitors utilizing the alternative 5 ppm difference performance specification in 40 CFR Part 75 shall meet the Relative Accuracy performance specifications and Cylinder Gas Audit (CGA) or Relative Accuracy Audit (RAA) requirements of 40 CFR 60 Appendix F.

(3) Relative Accuracy Test Audit (RATA): Monitors utilizing the alternative 0.020 lb/MMBtu RATA performance specification in 40 CFR Part 75 shall

meet the Relative Accuracy performance specifications and RATA requirements of 40 CFR 60 Appendix F.

d) For the CO CEMS, the Permittee shall meet the requirements of 40 CFR Part 60, including but not limited to the following:
   (1) 60.13 – Monitoring Requirements;
   (2) Appendix B – Performance Specification 4A; and
   (3) Appendix F – Quality Assurance Procedures.

e) The Permittee shall ensure that the CEMS are in operation and monitoring emissions at all times that the Combined Cycle Unit(s) combust any fuel except during periods of calibration, quality assurance, preventive maintenance, repair, back-ups of data from the data acquisition and handling system, or recertification. Malfunctions shall be recorded and reported as required by 40 CFR Part 60 and Part 75.

f) The Permittee shall prepare and maintain a monitoring plan in accordance with 40 CFR 75.53.

g) The Permittee shall operate and maintain each CEMS in accordance with the monitoring plan required by 40 CFR 75.53 and the Operation and Maintenance (O&M) Plan and Quality Assurance Plan (QAP) approved by the Department.

h) The Permittee shall ensure that the design, installation, operation, maintenance, O&M/QA Plan(s), and on-site spare parts inventory are sufficient to ensure that the CEMS meet the data capture requirements of 40 CFR Parts 60 and 75.

i) The Permittee shall at least annually conduct a RATA and bias check. The annual RATA and bias check shall be conducted within 12 months following the issuance date of this permit and within 12 months following of each subsequent RATA and bias check. The Permittee shall at least quarterly conduct linearity checks and cylinder gas audits (CGA). The Permittee shall at least daily conduct calibration error and drift checks. More frequent audits and checks shall be conducted as required by 40 CFR Parts 60 and 75.

j) The Permittee shall ensure that all calibration gases (including zero gases) are certified and current at all times.

k) The Permittee shall re-calibrate any CEMS after any maintenance activity that could affect the system calibration and shall re-certify as required by and within the time periods required by 40 CFR 75.20(b) whenever the Permittee makes a replacement, modification, or change that may significantly affect the ability of the system to accurately measure or record emissions.

l) The Permittee shall develop and implement daily, monthly, quarterly, and annual maintenance checklists to ensure proper operation and accuracy of the CEMS. The checklists shall be established as part of the O&M and QA Plans.

m) The Permittee shall install, calibrate, certify, maintain, and operate natural gas fuel flow meters on each fuel line to monitor the unit-specific fuel flow to the Combined Cycle Units in accordance with the applicable requirements of 40 CFR Part 75 Appendix D. The output of the fuel flow meters shall be automatically recorded with a data acquisition and handling system.

n) The Permittee shall install, calibrate, maintain, and operate on each SCR system monitors to measure the ammonia injection rate. The flow meters shall be sampled by a data acquisition system at a frequency of no less than once every 15 minutes and averaged into rolling 24 hours periods. These data will be used in conjunction

with the SCR systems O&M Plan to ensure compliance with the ammonia emission limits in Table 4 and to meet the emissions testing requirements of Table 7.

o) The Permittee shall maintain a file of all performance testing measurements, performance evaluations, certifications, calibrations, maintenance and adjustments (including completed maintenance checklists), and repairs made to the each continuous monitoring system or device and all other information required by 40 CFR Part 60 and 40 CFR Part 75 recorded in a permanent form for at least five years.

[County Rule 210 §302.1c, d] [40 CFR 60.7(f), 60.13, 60.334(c)] [County Rule 371] [40 CFR Part 75]

4) The Permittee shall determine and record the gross caloric value (GCV) of the pipeline quality natural gas at least once per month in accordance with the procedures in Section 2.3.4.1 or 2.3.4.2 of 40 CFR 75 Appendix D, as applicable.

[County Rule 371] [40 CFR Part 75]

5) For the purpose of calculating mass emissions and demonstrating compliance with NOx and CO mass emissions limits in Condition 18.A, the Permittee shall use the missing data substitution procedures 40 CFR 75 Subpart D and Appendix C. For CO monitoring data, the Permittee shall use the missing data estimation and substitution procedures prescribed for NOx. Alternatively, the Permittee may calculate mass emissions during periods of CEMS unavailability or inaccuracy by assuming that emissions are equal to the applicable pound-per-hour limitations contained in Tables 2 and 3 of Condition 18.A for normal operation and startup, shutdown, or tuning/testing, respectively.

[County Rule 210 §302.1c] [County Rule 371] [40 CFR 75 Subpart D]

6) The Permittee shall calculate NOx and CO emission rates in lb/MMBtu using the Procedures for NOx Emission Rate in 40 CFR 75 Appendix F. For CO, the value of K in Equations F-5 and F-6 = 7.266×10^{-8} (lb/dscf)/ppm CO. The Permittee shall calculate NOx and CO mass emissions (lb/hour) using the calculated lb/MMBtu rates, fuel flow monitor data, and the GCV of the pipeline natural gas in accordance with the procedures for SO_2 emissions contained in 40 CFR 75 Appendix D.

[County Rule 210 §302.1c] [County Rule 371] [40 CFR 75 Appendices D & F]

7) The Permittee shall determine and record the total sulfur content of the pipeline quality natural gas used in the Combined Cycle Units using the following custom monitoring schedule:

a) The Permittee shall monitor sulfur content of the pipeline quality natural gas at least once every calendar quarter.

b) If at any time a fuel sulfur analysis indicates noncompliance with the fuel sulfur limit in Condition 19.B.1 of this Permit, the Permittee shall notify the Administrator and the Control Officer of such excess emissions within one week of the analysis.

c) In the event of such noncompliance, the Permittee shall conduct fuel sulfur monitoring weekly until notified by the Administrator and the Control Officer that less frequent monitoring is acceptable.

d) The Permittee shall determine compliance with the sulfur content limit in Condition 19.B.1 of this Permit by using measurement methods ASTM D1072-80, 90; D3246-81, 92, 96; D4468-85; or D6667-01 either at the site or upstream or downstream of the site. If the applicable ranges of these ASTM methods are not adequate to measure the levels of sulfur, dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator and the Control Officer.

[County Rule 210 §302.1c] [40 CFR 60.334(h)(4) & (i)(3), §335(b)(10)]

8) The Permittee shall calculate SO_2 mass emissions using the fuel sulfur content data, the measured fuel flow rate, and the fuel gross caloric value using the procedures in 40 CFR 75 Appendix D.

[County Rule 210 §302.1c] [County Rule 371] [40 CFR Part 75 Appendix D]

9) VOC emissions during from the Combined Cycle Units during normal operating conditions shall be calculated using the emission factors contained in the Permit Application amended on March 28, 2006 and unit-specific fuel usage data, unless an alternative emission rate can be demonstrated to the satisfaction of the Control Officer and the Administrator to be more representative of emissions.

10) VOC emissions from the Combined Cycle Units during startup, shutdown, and testing/tuning operating conditions shall be calculated based on fuel flow and oxidation catalyst temperature in accordance with the mathematical model contained in the Permit Application amended on March 28, 2006, unless an alternative emission rate can be demonstrated to the satisfaction of the Control Officer and the Administrator to be more representative of emissions.

11) PM-10 emissions from the Combined Cycle Units during all operating conditions shall be calculated using the emission factor contained in the Permit Application amended on March 28, 2006 and unit specific fuel usage data, unless an alternative emission rate can be demonstrated to the satisfaction of the Control Officer and the Administrator to be more representative of emissions.

12) The Permittee shall monitor and record emissions from the Combined Cycle Units in units and averaging times consistent with all emissions limits contained in Condition 18.A. Rolling 365-day total emissions shall be calculated daily using the data from the most recent 365 calendar days, with a new 365-day total period beginning each calendar day. Rolling 12-month total emissions shall be calculated monthly using the data from the most recent 12-month period, with a new 12-month period beginning on the first day of each calendar month. Records of rolling 12-month total emissions shall be completed by the 15th day of each calendar month for the prior 12-month period.

[County Rule 210 §302.1c]

B. MONITORING AND RECORDKEEPING REQUIREMENTS FOR THE EMERGENCY USE ENGINES:

1) The Permittee shall record the actual hours of operation and the explanation for use of the Firewater Pump Engine and the Emergency Generator and the nature of the emergency or maintenance check that caused the engine to be used. At the end of each calendar month, the Permittee shall calculate and record the rolling 12-month total hours of operation of each engine. This value shall be calculated as the sum of the monthly hours of operation for the most recent month and the 11 previous months, and shall be recorded within 15 calendar days after the end of each calendar month. In addition, the Permittee shall keep a record that includes an initial one-time entry that lists the Firewater Pump Engine and Emergency Generator combustion type, manufacturer, model designation, rated brake horsepower, serial number and the location of the engine on site.

[County Rule 324 §502.1 and §502.4] [County Rule 210 §302.1c]

2) The Permittee shall keep all the records of the fuel supplier certification for the diesel fuel being combusted for at least five years. The supplier certification shall include:
   a) the name of the supplier,
   b) the sulfur content of the fuel;
   c) the method used to determine the sulfur content of the fuel;
   d) the date that the fuel was delivered to the site; and
   e) the date that the fuel was sampled for sulfur content.

[County Rule 320] [SIP Rule 32] [County Rule 210 §302.1c]

C. MONITORING AND RECORDKEEPING REQUIREMENTS FOR THE COOLING TOWERS:

1) PM-10 emissions from each Cooling Tower shall be calculated from the following equation:

PM-10 Emissions (tons/yr) = Total Recirculation Rate (gallons/minute) * TDS Concentration (milligrams/liter) * 1.513E-10;

where:

the value 1.513E-10 is a conversion factor for cooling tower drift rate (0.0003%), grams to tons, liters to gallons, minutes to year, 2.3 percent of total particulate as PM-10; and the Total Recirculation Rate is the total design recirculation rate for all nine cells in one tower.

2) Rolling 12-month total emissions shall be calculated monthly using the data from the most recent 12-month period, with a new 12-month period beginning on the first day of each calendar month. Records of rolling 12-month total emissions shall be completed by the 15th day of each calendar month for the prior 12-month period.

3) The Permittee shall monthly inspect the Cooling Tower drift eliminators for proper installation, maintenance, and operation. The results of the inspection shall be recorded in a facility log.

4) The Permittee shall daily monitor and record the conductivity of the Cooling Tower water and shall monthly monitor and record the Total Dissolved Solids (TDS) content of the cooling tower water.

[County Rule 210 §302.1c]

D. GENERAL FACILITY-WIDE MONITORING AND RECORDKEEPING REQUIREMENTS:

1) Visible Emissions

a) The Permittee shall conduct a visual inspection of the stack emissions from each Combined Cycle Unit and each Cooling Tower during each week of operation that the equipment was used more than 10 hours.

[County Rule 300] [County Rule 210 §302.1c]

b) The Permittee shall conduct a monthly visual inspection of emissions from the Firewater Pump Engine and the Emergency Generator, during normal operation.

c) If visible emissions, other than uncombined water, are observed being discharged into the ambient air, the Permittee shall monitor for compliance with the opacity standards specified in this permit by having a certified visible emissions evaluator determine the opacity of the visible emissions being discharged into the ambient air using the techniques specified in EPA Reference Method 9.

If the Permittee has not received either a compliance status notification or notice of violation regarding an opacity standard in the 12 months preceding the observation of visible emissions, the initial Method 9 opacity reading shall be taken within three days of observing visible emissions. If the Permittee has received either a compliance status notification or notice of violation regarding an opacity standard in the 12 months preceding the observation of emissions, the initial Method 9 opacity reading shall be taken within one day of observing visible emissions. If the emitting equipment is not operating on the day that the initial Method 9 opacity reading is required to be taken, then the initial Method 9 opacity reading shall be taken the next day that the emitting equipment is in operation. If the problem causing the visible emissions is corrected before the initial Method 9 opacity reading is required to be performed, and there are no visible emissions (excluding uncombined water) observed from the previously emitting equipment while the equipment is in normal operation, the Permittee shall not be required to conduct the Method 9 opacity readings.

Follow-up Method 9 opacity readings shall be performed by a certified visible emissions evaluator while the emitting equipment in its standard mode of operation in accordance with the following schedule:

(1) Daily:

a) Except as provided in paragraph 3 of this Permit Condition, a Method 9 opacity reading shall be conducted each day that the emitting equipment is operating until a minimum of 14 daily Method 9 readings have occurred.

b) If the Method 9 opacity readings required by this Permit Condition are less than 20% for 14 consecutive days, the frequency of Method 9 opacity readings may be decreased to weekly, in accordance with paragraph 2 of this Permit Condition.

(2) Weekly:

a) If the Permittee has obtained 14 consecutive daily Method 9 readings which do not exceed 20% opacity, the frequency of Method 9 readings may be decreased to once per week for any week in which the equipment is operated.

b) If the opacity measured during a weekly Method 9 reading exceeds 20%, the frequency of Method 9 opacity readings shall revert to daily, in accordance with paragraph 1 of this Permit Condition.

c) If the opacity measured during the required weekly Method 9 readings never exceeds 20%, the Permittee shall continue to obtain weekly opacity readings until the requirements of paragraph 3 of this Permit Condition are met.

(3) Cease Follow-up Method 9 Opacity Monitoring:
Regardless of the applicable monitoring schedule, follow-up Method 9 opacity readings may cease if the emitting equipment, while in its standard mode of operation, has no visible emissions, other than uncombined water, during every Method 9 opacity observation taken for two weeks.

[County Rule 210 §302.1c]

d) Opacity Readings

(1) Opacity shall be determined by observations of visible emissions conducted in accordance with 40 CFR Part 60 Appendix A, Method 9.

(2) Opacity of visible emissions from intermittent sources as defined by County Rule 300 §201 shall be determined by observations conducted in accordance with 40 CFR Part 60 Appendix A, Method 9, except that at least 12 rather than 25 consecutive readings shall be required at 15-second intervals for the averaging time.

[County Rule 300 §501 and §502] [locally enforceable only]

e) The Permittee shall log the following information for all visible emissions observations and Method 9 opacity readings required by this permit:

(1) The date and time the visible emissions observation or Method 9 opacity reading was taken;

(2) The name of the observer;

(3) Whether or not visible emissions were present;

(4) If visible emissions are present and the controls and facility processes are operating in a mode other than their normal operating conditions, such as startup or shutdown, a description of the operating conditions at the time that the opacity is observed;

(5) If visible emissions were present, the identity of the equipment or process with the visible emissions,

(6) The opacity determined by a Method 9 opacity reading, if a Method 9 reading is required by these permit conditions;
(7) If applicable, a description of any corrective action(s) taken, including the date of such action(s); and
(8) Any other related information.

[County Rule 300] [County Rule 210 §302.1d]

2) Odors and Gaseous Air Contaminants
The Permittee shall maintain a log of complaints of odors detected off-site. The log shall contain a description of the complaint, date and time that the complaint was received, and if given, name and/or phone number of the complainant. The logbook shall describe what actions were performed to investigate the complaint, the results of the investigation, and any corrective actions that were taken.

[County Rule 320] [SIP Rule 32] [County Rule 210 §302.1d]

3) In addition to summary information provided in the Compliance Certification and Monitoring Report submitted under Condition 21.D, the Permittee shall maintain on site at least the following information that supports the conclusions reached in the Report:
a) Hours of operation and amount of fuel burned each hour for each Combustion Turbine and hours of operation of the Firewater Pump Engine and Emergency Generator.
b) Electrical energy output of each Combustion Turbine for each hour of operation.
c) Dates on which visible emissions observations were taken, the test method used, and the results of the observations.
d) Continuous emissions monitoring data related to the emission limits contained in this permit, calibrations, quality assurance, performance demonstrations, and certifications for the reporting period.
e) Stack emissions test results related to emission limits and/or operational requirements in this Permit.
f) Cooling Tower inspection log and results of conductivity and TDS monitoring.
g) Odor log.
h) Any other records and reports required by any permit condition contained in this Permit.

[County Rule 210 §302.1d]

E. MONITORING TRANSITION:

The Permittee is allowed 90 days following issuance of this permit to comply with any new monitoring requirement(s). During the 90-day transition period, the Permittee shall continue to comply with the monitoring requirements of the previous permit until each corresponding new requirement is met. The Permittee shall notify the Control Officer in writing by mail when all new monitoring requirements have been met.

[County Rule 210 §302.1c(2)]

21. REPORTING REQUIREMENTS:

A. The Permittee shall file a written notice with the Control Officer as described in 40 CFR 60.7 as follows: A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under 40 CFR 60.14(e). This notice shall be postmarked within 60 days or as soon as commenced and shall include information describing the precise nature of the change, present and proposed emissions control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. Copies of the notifications required by this Permit Condition shall be sent to the Administrator of the United States Environmental Protection Agency (USEPA).

[County Rule 360, §301.1] [40 CFR 60.7(a)]

B. In addition to the reports filed by the Permittee in accordance with 40 CFR Part 75 Subpart G, the Permittee shall electronically report to EPA the data and information as required by 40 CFR Part 75.64 on a quarterly basis. Quarterly submittals shall include facility data, unit emission data, monitoring data, control equipment data, monitoring plans and quality assurance data and results.

[County Rules 210, 371] [40 CFR 75 Subpart G]

C. By December 31st of each year, the Permittee shall submit the tuning and testing schedule for the Combined Cycle Units for the following calendar year. The schedule shall list the dates of all tuning and testing events that are expected to be subject to the emission limits in Table 3 of Condition 18.A. If there is a change to the schedule, the Permittee shall submit a revised schedule to the Control Officer at least 24 hours before any re-scheduled tuning or testing event. All submittals required by this permit condition shall be in written format, and if submitted by facsimile, shall be followed by mailed copy.

[County Rule 210 §302.1e]

D. The Permittee shall file a Semiannual Compliance Certification and Monitoring Report in accordance with the schedule in the table below. The Permittee shall file the Semiannual Compliance Certification and Monitoring Report with the Control Officer, Attn: Large Source Compliance Supervisor and with the Administrator of the USEPA.

Report	Reporting Period	Report Due Date
Final Compliance and Monitoring report and Semiannual Compliance Certification which reflects the requirements in the previous permit	From the end of the previous reporting period to the issuance date of this permit	Report is due by April 30th or October 31st, whichever is the earlier date following issuance of this permit.
Initial Semiannual Compliance Certification and Monitoring Report which reflects the requirements of this permit	Permit issuance date until March 31st or September 30th, whichever is earlier	Report is due by the end of the month following the reporting period (April 30th or October 31st, whichever is earlier)
Subsequent Semiannual Compliance Certification and Monitoring reports	Six month periods ending on March 31st and September 30th	Reports are due by the end of the month following the reporting period (April 30th or October 31st, as applicable)

1) The Semiannual Compliance Certification and Monitoring report shall certify compliance with the terms and conditions contained in this Permit, including emission limitations, standards, or work practices. The Semiannual Compliance Certification and Monitoring report shall be on a form supplied or approved in advance by the Control Officer, if available. According to County Rule 210, Section 305.1(d) each permittee shall submit a compliance certification at least annually. This annual requirement is met through both semiannual reports required by this permit with a full year completed upon submittal of the report associated with the July 1st to December 31st reporting period. The Semiannual Compliance Certification and Monitoring report shall contain the following information at a minimum:
   a) The identification of each term or condition of the permit that is the basis of the certification;
   b) The compliance status;
   c) Whether compliance was continuous or intermittent;
   d) The method(s) used for determining the compliance status of the source, currently and over the reporting period; and
   e) Other facts as the Control Officer may require to determine compliance status of the source.
   f) Each report shall cover all instances of deviations from these permit conditions during the reporting period, the cause of the deviations if any were present, and any applicable corrective actions taken.
   g) Summary information on the number, duration and cause (including unknown cause, if applicable) of exceedances of the emission limits in Section 18 of this permit and the corrective actions taken.
   h) Summary information on the number, duration and cause (including unknown cause, if applicable) for NOx, CO, and diluent CEMS downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable).

i) The Permittee shall include a copy of the portion of the odor log which covers the applicable 6 month reporting period in each of the Semiannual Compliance and Monitoring Reports. If no complaints were received during the reporting period, a statement to that effect may be substituted for the copy of the odor log.

j) The Permittee shall comply with applicable reporting requirements for support operations including architectural coating (Permit Condition 24), dust generating operations (Permit Condition 25), abrasive blasting (Permit Condition 26), cold degreasing and wipe cleaning (Permit Condition 27), and cutback & emulsified asphalt (Permit Condition 28).

k) If any visible emissions observation or Method 9 opacity reading required by these permit conditions was not performed, notification of the time span(s) when the requirements were not met, the reason why the observation or reading was not performed and, if applicable, any corrective actions taken to assure that any required observations and readings are taken in the future.

l) If visible emissions are identified during a visual emissions observation, the following information shall be included in the report:
   a) Date and time when visible emissions were observed;
   b) Name of the observer;
   c) Identity of the equipment or process with the visible emission;
   d) If applicable, a description of any abnormal operating conditions at the time such as start up, shutdown or malfunction; and
   e) A description of any corrective actions taken, including the date such action was taken.

m) If a Method 9 emissions reading is required to be taken by these permit conditions, the following information shall be included in the report:
   a) Date and time when visible emissions were observed;
   b) The name of individual certified as a visible emissions evaluator, the date of last certification, and company/agency providing the certification;
   c) Identity of the equipment or process with the visible emission;
   d) If applicable, a description of any abnormal operating conditions at the time such as start up, shutdown or malfunction;
   e) A copy of the results; and
   f) A description of any corrective actions taken, including the date such action was taken.

[County Rule 210 §302.1(e)(1), 305.1(c) , and 305.1(d)]
[County Rule 360, §301.1] [40 CFR 60.7(c)]

22. TESTING REQUIREMENTS:

A. SPECIFIC TESTING REQUIREMENTS FOR COMBINED CYCLE UNITS:

The Permittee shall monitor for compliance with the emission limits of Tables 1, 2, and 4 by conducting stack emissions tests as specified in Table 7.

[County Rule 210 §302.1.c.(2) and (3)] [40 CFR 60.8]

Table 7 Stack Emissions Test Requirements

Device to be Tested and Operating Conditions	Pollutant	Method[1]	Frequency
Each Combined Cycle Unit	NOx	RATA testing In accordance with Condition 20.A.(3)(b), (c) & (i) of this permit	In accordance with Condition 20.A.(3)(b), (c) & (i) of this permit
	CO	RATA testing In accordance with Condition 20.A.(3)(d) & (i) of this permit	In accordance with Condition 20.A.(3)(d) & (i) of this permit
Each Combined Cycle Unit when operating either at full load available on the day of testing or at an alternative load level established and approved as part of the pretest protocol[2,3]	PM-10[4, 5]	Method 201A and 202	Annually, between 11 and 13 months from the date of the last PM-10 test
	VOC	Method 25A and 18	Annually, between 11 and 13 months from the date of the last VOC test
	Ammonia[6]	EPA Conditional Test Method CTM-027 or Bay Area Air Quality Management District Source Test Procedure ST-1B	At the time of next PM-10 test. Subsequent tests shall be performed every three years (within 34 to 38 months of the previous test). In addition, an ammonia test shall be performed within 90 days following complete SCR system catalyst replacement.
Each Combined Cycle Unit when operating at full load available on the day of testing[2,3]	Formaldehyde	CTM-037 "Method for Measurement of Formaldehyde Emissions From Natural Gas-Fired Stationary Sources - Acetyl Acetone Derivitization Method"	Within 180 days after permit issuance
	Hexane	Compendium Method TO-15	Within 180 days after permit issuance

[County Rule 210 §302.1c(2) and (3); locally enforceable only] [40 CFR 60.8]
[40 CFR 60.335(a) and (b)]

1) "Method" refers to 40 CFR Part 60 Appendix A emissions testing methods.
2) Full load available on the day of testing includes operation of the combined cycle unit and any other means of increasing generator output (evaporative coolers, chillers, etc.) unless atmospheric conditions preclude their use.
3) During each performance test, the Permittee shall record the combined cycle unit generator output, fuel flow rate, SCR inlet temperature and ammonia injection rate. These and any

additional operational parameters shall be identified in the test protocol and recorded during testing.

4) For PM-10 testing (filterable and condensable), EPA test Method 5 may be substituted for EPA Test method 201A, if the Permittee agrees to assume that all particulates are PM10.
5) The sampling time and sample volume for each PM-10 test run shall be at least 120 minutes and 1.70 dscm (60 dscf).
6) If the catalyst bed in the Selective Catalytic Reduction System is replaced in its entirety at any time, then the Permittee shall notify the Department in writing within two weeks of the replacement. The affected stack(s) shall be tested for ammonia within 90 days of installation of the new catalyst, and every three years thereafter.

[County Rule 270] [County Rule 210 §302]

B. Testing Criteria: Performance tests shall be conducted and data reduced in accordance with the test methods and procedures specified unless the Control Officer and Administrator specifies or approves minor changes in methodology to a reference method, approves the use of an equivalent test method, approves the use of an alternative method that has been determined to be acceptable for demonstrating compliance, or waives the requirement for performance tests because the Permittee has demonstrated by other means that the source is in compliance with the standard. For NSPS facilities, only EPA has the authority to waive initial testing requirements.

[County Rule 270 §402][SIP Rule 27 §B][40 CFR §60.8(b)]

C. Test Methods: Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1or 1A. The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2, 2A, 2C, 2D, 2F, 2G or 19. The dry molecular weight shall be determined in accordance with EPA Test Method 3, 3A or 3B. The stack gas moisture shall be determined in accordance with EPA Test Method 4. These methods must be performed, as applicable, during each test run.

[County Rule 270 §301.1][SIP Rule 27 §B]

D. Operating Conditions: Performance tests shall be conducted under representative operating conditions and all equipment shall be operated during testing in accordance with the most recently approved O&M Plan or according to its operations manual if no O&M Plan is required. The Permittee shall make available to the Control Officer any records necessary to determine appropriate conditions for performance tests. Operations during periods of startup, shutdown, and equipment malfunction shall not constitute representative conditions for performance tests unless otherwise specified in the applicable standard or permit conditions (refer to Table 7).

[County Rule 270 §403][40 CFR §60.8(c)]

E. Monitoring Requirements: The Permittee shall record all process and control equipment information that are necessary to document operating conditions during the test and explain why the conditions represent normal operation. Operational parameters shall be monitored and recorded at least once every 30 minutes during each of the required test runs and documented in the test report. The operational parameters monitored shall be capable of indicating that the equipment is operating within the permitted limits, both during and after the performance tests.

[County Rule 270 §301.1][SIP Rule 27 §B]

F. Test Protocol Submittal: The Permittee shall submit a separate test protocol for each performance test to the Department for review and approval at least 30 days prior to each performance test. The test protocol shall be prepared in accordance with the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated June 17, 2005. A completed copy of the Department's "Test Protocol Submittal Form" shall accompany each test protocol.

[County Rule 270 §301.1][SIP Rule 27 §B][40 CFR §60.8(d)]

G. Notice of Testing: The Permittee shall notify the Department in writing at least two weeks in advance of the actual date and time of each performance test so that the Department may have a representative attend.

[County Rule 270 §404][40 CFR §60.8(d)]

H. Testing Facilities Required: The Permittee shall install any and all sample ports or platforms necessary to conduct the performance tests, provide safe access to any platforms and provide the necessary utilities for testing equipment.

[County Rule 270 §405][SIP Rule 42][40 CFR §60.8(e)]

I. Minimum Testing Requirements: Each performance test shall consist of three separate test runs with each test run being at least one hour in duration unless otherwise specified in the applicable standard or in this permit. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. If compliance with the ammonia limit included in Table 4 of Condition 18.A is not demonstrated using the results of three one-hour minimum test runs, the performance test shall be repeated with three test runs each lasting at least eight hours. Performance tests may only be stopped for good cause, which includes forced shutdown, forced load changes, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.

[County Rule 270 §406][40 CFR §60.8(f)]

J. Test Report Submittal: The Permittee shall complete and submit a separate test report for each performance test to the Department within 30 days after the completion of testing. The test report shall be prepared in accordance with the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated June 17, 2005. A completed copy of the Department's "Test Report Submittal Form" shall accompany each test report.

The test report(s) associated with the required formaldehyde and hexane stack tests shall include an analysis of the facility's major source status with regard to total HAP emissions. In conducting the analysis, the Permittee shall use the results of the performance tests to compute potential annual emission rates for formaldehyde and hexane. In order to estimate annual emissions of the remaining HAPs, the Permittee shall use either EPA-approved emission calculation methods or the calculation methods included in the most recently

submitted Title V permit application. Should the analysis indicate that the facility is a major source for total HAP emissions (i.e., above 25 tons of total HAP per year), the Permittee shall conduct testing for additional HAPs in order to verify the major source status.

[County Rule 270 §301.1][SIP Rule 27 §B]

K. Compliance with Emission Limits: Compliance with allowable emission limits and standards shall be determined by the performance tests specified in this permit. If test results do not demonstrate compliance with the requirements of these permit conditions, the Permittee shall make the necessary repairs and/or adjustments to the equipment and demonstrate compliance through retesting. This will not nullify the fact that test results did not demonstrate compliance with the requirements of the permit conditions or nullify any violations that may result from this noncompliance. In addition to compliance demonstrations, test results shall be used for annual emissions inventory purposes, if applicable.

[County Rule 270 §407]

L. All test extension requests, test protocols, test date notifications, and test reports required by this permit shall be submitted to the Department and addressed to the attention of the Performance Test Evaluation Supervisor.

[County Rule 270 §301.1][SIP Rule 27 §B]

23. OTHER REQUIREMENTS:

A. PERMIT SHIELD:

Compliance with the conditions of this Permit shall be deemed compliance with the applicable requirements identified in Appendix C of this Permit. The Permit Shield shall not extend to minor permit revisions.

[County Rule 210 §§405.7 and 407]

B. ACID RAIN PERMIT:

1) The Acid Rain Phase II Permit Application and Certificate of Representation signed by the Designated Representative on March 29, 2006 and submitted to the Control Officer, shall constitute the Permittee's Acid Rain Permit.

2) The Permittee shall comply with the Acid Rain Permit, 40 CFR Parts 72, 73, and 75, and the Acid Rain requirements of Permit Condition 6.A.

3) The relevant Conditions of this Permit and the Acid Rain Permit, including but not limited to, the Allowable Emission Limits, Operation Requirements, Monitoring/Recordkeeping Requirements, Reporting Requirements, and Testing Requirements shall constitute the Compliance Plan required by 40 CFR Part 72 Subpart D.

4) The Permittee shall hold SO_2 Allowances as of the allowance transfer deadline in each Combined Cycle Unit compliance subaccount not less than the total annual actual

emissions of SO_2 for the previous calendar year from each Combined Cycle Unit as required by the Acid Rain Program.

5) The SO_2 Allowance Allocations and NOx Requirements for each Combined Cycle Unit are as follows:

Affected Unit	Pollutant	Years 2000 – 2009	Years 2010 and beyond
Combined Cycle Unit Nos. 1, 2 and 3	SO_2	NA*	NA
	NOx	These units are not subject to NOx limits under 40 CFR Part 76	

*NA means no Allocations are available since these are new units.

[County Rule 371] [40 CFR 72, 73, and 75]

24. PERMIT CONDITIONS FOR ARCHITECTURAL COATINGS:

A. OPERATIONAL LIMITATIONS / STANDARDS:

1) The Permittee shall limit the volatile organic compound (VOC) content of architectural coatings as follows:

a) Pavement Sealer:
The Permittee shall not apply any architectural coating manufactured after July 13, 1988, which is recommended for use as a bituminous pavement sealer unless it is an emulsion type coating.

[County Rule 335 §301] [SIP Rule 335 §301]

b) Non-Flat Architectural Coating:
The Permittee shall not apply any non-flat architectural coating manufactured after July 13, 1989, which contains more than 3.2 lbs (380 g/l) of volatile organic compounds per gallon of coating, excluding water and any colorant added to tint bases. These limits do not apply to specialty coatings listed below.

[County Rule 335 §302] [SIP Rule 335 §302]

c) Flat Architectural Coating:
The Permittee shall not apply any flat architectural coating manufactured after July 13, 1990, which contains more than 2.1 lbs (250 g/l) of volatile organic compounds per gallon of coating, excluding water and any colorant added to tint bases. These limits do not apply to specialty coatings listed below.

[County Rule 335 §304] [SIP Rule 335 §304]

d) Specialty Coatings:

[County Rule 335 §305] [SIP Rule 335 §305]

The Permittee shall not apply any architectural coating that exceeds the following limits. The limits are expressed in pounds of VOC per gallon of coating as applied, excluding water and any colorant added to tint bases.

COATING	(lb/gal)
Concrete Curing Compounds	2.9
Dry Fog Coating	

Flat	3.5
Non-flat	3.3
Enamel Undercoaters	2.9
General Primers, Sealers and Undercoaters	2.9
Industrial Maintenance Primers and Topcoats	
Alkyds	3.5
Catalyzed Epoxy	3.5
Bituminous Coating Materials	3.5
Inorganic Polymers	3.5
Vinyl Chloride Polymers	3.5
Chlorinated Rubbers	3.5
Acrylic Polymers	3.5
Urethane Polymers	3.5
Silicones	3.5
Unique Vehicles	3.5
Lacquers	5.7
Opaque Stains	2.9
Wood Preservatives	2.9
Quick Dry Enamels	3.3
Roof Coatings	2.5
Semi-transparent Stains	2.9
Semi-transparent and Clear Wood Preservatives	2.9
Opaque Wood Preservatives	2.9
Specialty Flat Products	3.3
Specialty Primers, Sealers & Undercoaters	2.9
Stains, All	2.9
Traffic Coatings	
Applied to Public Streets and Highways	2.1
Applied to other Surfaces	2.1
Black Traffic Coatings	2.1
Varnishes	2.9
Waterproof Mastic Coating	2.5
Wood Preservatives Except Below Ground	2.9

e) Exemptions:

The VOC content requirement of this Permit Condition shall not apply to the following:

1) Architectural coatings supplied in containers having capacities of one quart or less.
2) Architectural coatings recommended by the manufacturer for use solely as one or more of the following:
   (a) Below ground wood preservative coatings.
   (b) Bond breakers.
   (c) Fire retardant coatings.
   (d) Graphic arts coatings (sign paints)
   (e) Mastic texture coatings.
   (f) Metallic pigmented coatings.

(g) Multi-colored paints.
(h) Quick-dry primers, sealers and undercoaters.
(i) Shellacs.
(j) Swimming pool paints.
(k) Tile-like glaze coatings.

[County Rule 335 §§306, 307] [SIP Rule 335 §§306, 307]

2) Container Labeling:

a) Thinning:

The Permittee shall use only architectural coatings which are in containers carrying a statement of the manufacturer's recommendation regarding thinning of the coatings. Label data may be quantified with either English or metric units. This requirement shall not apply to the thinning of the architectural coatings with water. Architectural coatings subject to the Federal Insecticide, Fungicide and Rodenticide Act shall not be subject to the labeling requirements of this permit.

[County Rule 335 §401] [SIP Rule 335 §401]

b) Date of Manufacturer:

Permittee shall use architectural coatings which display the date of manufacture of the contents or a code indicating the date of manufacture on each container. If a code is used then an explanation of each code shall be sent by the Permittee to the Control Officer.

[County Rule 335 §402][SIP Rule 335 §402]

3) Equipment Cleanup:

The Permittee shall not use any liquid materials containing more than 10 percent volatile organic compounds for the cleanup of equipment unless:

a) The used cleaning liquids are collected in a container which is closed when not in use and is disposed of in a manner such that volatile organic compounds are not emitted into the atmosphere.
b) The equipment is disassembled and cleaned in a solvent vat which is closed when not in use, or cleaning is done by other methods, approved in writing by the Control Officer, which limit evaporation.

[County Rule 330 §305]

4) VOC Containment and Disposal

The Permittee shall not store, discard, or dispose of any VOC or VOC containing material including Architectural Coatings with VOCs in a way intended to cause or allow the evaporation of VOCs to the atmosphere. Reasonable measures shall be taken to prevent such evaporation which include but are not limited to the following:

a) All materials from which VOCs can evaporate, including fresh solvent, waste solvent, Architectural Coatings with VOCs and solvent-soaked rags and residues, shall be stored in closed containers when not in use.
b) Such containers one gallon and larger shall be legibly labeled with their contents.
c) Records of the disposal/recovery of such materials shall be kept. Records of hazardous waste disposal shall be kept in accordance with hazardous waste disposal statutes.

[County Rule 330 §306]

B. RECORDKEEPING

The Permittee shall keep the material list of all coatings used. The material list should contain the name of each coating, short description of the material, pounds of VOCs per gallon of coating, excluding water and colorant added to tint bases and amount used. If the coating is exempt from the volatile organic compounds content requirements, the justification for the determination shall be documented and kept on file.

[County Rule 210 §302.1c, d]

C. REPORTING

The Permittee shall include the following in the Semiannual Compliance Certification and Monitoring Report.

1) The report shall contain a material list showing VOC content of each in lb/gallon or grams/liter.
2) The report being sent to Division with attention to: Large Sources Compliance Supervisor shall contain a material list and a list of the coatings which are exempt from the volatile organic compounds content requirements

[County Rule 210 §302.1e]

D. TESTING

If required by the Control Officer testing procedures to determine compliance with prescribed VOC limits shall be consistent with Reference Methods 24 and 24A in the Arizona Testing Manual for Air Pollutant Emissions.

[County Rule 335 §500 and SIP Rule 335 §500]

25. PERMIT CONDITIONS FOR DUST GENERATING OPERATIONS:

A. DUST CONTROL PLAN REQUIRED

1) The Permittee shall submit a Dust Control Plan and obtain the Control Officer's approval of the Dust Control Plan, before commencing any routine dust generating operation. The Dust Control Plan shall describe all control measures to be implemented before, after and while conducting any dust generating operation, including during weekends, after work hours, and on holidays. The Plan shall include at least all the information contained in County Rule 310 §304. At least one primary control measure and one contingency control measure must be identified from Tables 1-19 of County Rule 310, included at the end of this permit condition.

[County Rule 310 §§303.1, 303.2, 303.3 and 303.4]
[SIP Rule 310 §§303.1, 303.2, 303.3 and 303.4]

2) Failure to comply with the provisions of an approved Dust Control Plan is deemed to be a violation of this Permit. Regardless of whether an approved Dust Control Plan is in place or not, the Permittee is still subject to all requirements of these permit conditions at all times. In addition, the Permittee with an approved Dust Control Plan is still subject to all

of the requirements of County Rule 310, even if the Permittee is complying with the approved Dust Control Plan.

[County Rule 310 §§303.2 and 306] [SIP Rule 310 §§303 and 306]

3) If the Control Officer determines that an approved Dust Control Plan has been followed, yet fugitive dust emissions from any given fugitive dust source still exceed limits from this permit condition, then the Permittee shall make written revisions to the Dust Control Plan and shall submit such revised Dust Control Plan to the Control Officer within three working days of receipt of the Control Officer's written notice, unless such time period is extended by the Control Officer, upon request, for good cause. During the time that the Permittee is preparing revisions to the approved Dust Control Plan, the Permittee must still comply with all requirements of these permit conditions.

[County Rule 310 §305] [SIP Rule 310 §305]

4) If any changes to a Dust Control Plan, associated with this Permit, are necessary as a result of the most recent revisions of County Rule 310, then the Permittee shall submit a revised Dust Control Plan to the Control Officer, according to the minor permit revision procedures described in County Rule 210, no later than 6 months after the effective date of the most recent revisions to County Rule 310.

[County Rule 310 §402.2] [SIP Rule 310 §402.2]

B. ALLOWABLE EMISSIONS

1) The Permittee shall not allow visible fugitive dust emissions to exceed 20% opacity. Exceedances of the opacity limit that occur due to a wind event shall constitute a violation of the opacity limit. However, it shall be an affirmative defense in an enforcement action if the Permittee demonstrates all of the following conditions:
   a) All control measures required were followed and one or more of the control measures in Tables 20 & 21 of this permit condition were applied and maintained;
   b) The 20% opacity exceedance could not have been prevented by better application, implementation, operation, or maintenance of control measures;
   c) The Permittee compiled and retained records, in accordance with the recordkeeping requirements of this permit; and
   d) The occurrence of a wind event on the day(s) in question is documented by records. The occurrence of a wind event must be determined by the nearest Maricopa County Environmental Services Department Air Quality Division monitoring station, from any other certified meteorological station, or by a wind instrument that is calibrated according to manufacturer’s standards and that is located at the site being checked.

   [County Rule 310 §301.1, Tables 20 &21][SIP Rule 310 §301.1 and Table 2]

2) No opacity limitation shall apply to emergency maintenance of flood control channels and water retention basins, provided that control measures are implemented.

[County Rule 310 §301.2] [locally enforceable only][SIP Rule 30]

C. OPERATIONAL REQUIREMENTS FOR FUGITIVE DUST SOURCES

1) Stabilization Requirements

a) The Permittee shall not allow visible fugitive dust emissions from unpaved parking lots to exceed 20% opacity and either;

1) shall not allow silt loading equal to or greater than 0.33 oz/ft^2;
2) shall not allow the silt content to exceed 8%.

[County Rule 310 §302.1] [SIP Rule 310 §302.1]

b) The Permittee shall not allow visible fugitive dust emissions from unpaved Haul/Access roads to exceed 20% opacity and either,

1) shall not allow silt loading equal to or greater than 0.33 oz/ft^2;
2) shall not allow the silt content to exceed 6%.

[County Rule 310 §302.2a] [SIP Rule 310 §302.2a]

c) The Permittee shall, as an alternative to meeting the stabilization requirements for an unpaved haul/access road, limit vehicle trips to no more than 20 per day per road and limit vehicle speeds to no more than 15 miles per hour. If complying with subsection 302.2(b) of County Rule 310, the Permittee must include, in the Dust Control Plan, the maximum number of vehicle trips on the unpaved haul/access roads each day (i.e. number of employee vehicles, earthmoving equipment, haul trucks and water trucks).

[County Rule 310 §302.2b] [SIP Rule 310 §302.2b]

d) The Permittee shall meet at least one of the standards below, as applicable, for any open areas and vacant lots or any disturbed surface areas on which no activity is occurring. Should a disturbed open area and/or vacant lot or any disturbed surface area on which no activity is occurring contain more than one type of disturbance, soil, vegetation, or other characteristics, which are visibly distinguishable, the Permittee shall test each representative surface separately for stability, in an area that represents a random portion of the overall disturbed conditions of the site, according to the appropriate test methods in Appendix C of the Maricopa County rules, and include or eliminate it from the total size assessment of disturbed surface area(s) depending upon test method results. The Permittee shall be considered in violation of Maricopa County Rule 310 if such inactive disturbed area is not maintained in a manner that meets at least one of the standards listed below, as applicable.

1) Maintain a visible crust;
2) Maintain a threshold friction velocity (TFV) for disturbed surface areas corrected for non-erodible elements of 100 cm/second or higher;
3) Maintain a flat vegetative cover (i.e., attached (rooted) vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50%;
4) Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal or greater than 30%;
5) Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater

than 10% and where the threshold friction velocity is equal to or greater than 43 cm/second when corrected for non-erodible elements;

6) Maintain a percent cover that is equal to or greater than 10% for non-erodible elements;

7) Comply with a standard of an alternative test method, upon obtaining the written approval from the Control Officer and the Administrator of the Environmental Protection Agency (EPA).

[County Rule 310 §302.3] [SIP Rule 310 §302.3]

2) Control Measures: The Permittee shall implement control measures before, after and while conducting any dust generating operation, including during weekends, after work hours, and on holidays, in accordance with Section 304.3 and Tables 1-21 (incorporated at the end of this Permit Condition) of County Rule 310 For the purpose of these Permit Conditions, any control measure that is implemented must meet the applicable standard(s) described in County Rule 310 §§301 and 302, as determined by the corresponding test method(s), as applicable, and must achieve other applicable standard(s) set forth in County Rule 310. Failure to comply with the provision of County Rule 310 §308 (Work Practices), as applicable, and/or of an approved Dust Control Plan, is deemed a violation of this Permit.

[County Rule 310 §306] [SIP Rule 310 §306]

3) Should any primary control measures(s) in an approved Dust Control Plan prove ineffective, the Permittee shall immediately implement the contingency control measure. If the identified contingency control measure(s) is effective to comply with all of the requirements of County Rule 310 and this Permit, the Permittee need not revise the Dust Control Plan under Section 305 of County Rule 310 and this permit condition, which may obviate the requirement of submitting a revised Dust Control Plan.

[County Rule 310 §303.3] [SIP Rule 310 §303.2]

4) Work Practices: The Permittee shall comply with the following work practices in addition to implementing, as applicable, the control measures described in Table 1-21 in County Rule 310 included at the end of this permit condition:

a) Bulk Material Hauling **Off-Site** onto Paved Areas Accessible to the Public: Notwithstanding other sections of County Rule 310 and this Permit, the Permittee shall do all of the following:

1) Load all haul trucks such that the freeboard is not less than three inches;

2) Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/pr tailgate(s);

3) Cover all haul trucks with a tarp or other suitable closure; and

4) Before the empty haul truck leaves the site, clean the interior of the cargo compartment or cover the cargo compartment.

b) Bulk Material Hauling **On-Site** Within the Boundaries of the Work Site: When crossing a paved area accessible to the public while construction is underway, the Permittee shall do all of the following:

1) Load all haul trucks such that the freeboard is not less than three inches; and

2) Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate(s); and

3) Install a suitable trackout control device that controls and prevents trackout and/or removes particulate matter from tires and the exterior surfaces of haul trucks and/or motor vehicles that traverse such work site. Examples of trackout control devices are described in Table 17 at the end of this permit condition.

c) Unpaved Haul/Access Roads: The Permittee shall implement one or more control measure(s) described in Table 3 shown at the end of this permit condition (Unpaved Haul/Access Roads) before maintaining unpaved haul/access roads.

d) Open Storage Piles:

For the purpose of this permit, an open storage pile is any accumulation of bulk material with a 5% or greater silt content which in any one point attains a height of three feet and covers a total surface area of 150 square feet or more. Silt content shall be assumed to be 5% or greater unless a person can show, by testing in accordance with ASTM Method C136-96A or other equivalent method approved in writing by the Control Officer and the Administrator of EPA, that the silt content is less than 5%.

1) Prior to and/or while conducting stacking, loading, and unloading operations, comply with one of the following work practices:
   a) Spray material with water, as necessary; or
   b) Spray material with a dust suppressant other than water, as necessary.

2) When not conducting stacking, loading, And unloading Operations, comply with one of the following work practices:
   a) Cover open storage piles with tarps, plastic, or other material to prevent wind from removing the coverings; or
   b) Apply water to maintain a soil moisture content at a minimum of 12%, as determined by ASTM Method D2216-98, or other equivalent methods approved by the Control Officer and the Administrator of EPA. For areas which have an optimum moisture content for compaction of less than 12%, as determined by ASTM Method D1557-91(1998) or other equivalent approved by the Control Officer and the Administrator of EPA, maintain at least 70% of the optimum soil moisture content; or
   c) Meet one of the stabilization requirements described in Section 302.3 of County Rule 310; or
   d) Construct and maintain wind barriers, storage silos, or a three-sided enclosure with walls, whose length is no less than equal to the length of the pile, whose distance from the pile is no more than twice the height of the pile, whose height is equal to the pile height, and whose porosity is no more than 50%. If implementing this subsection, must also implement subsection (b) or (c) above.

[County Rule 310 §308 and Table 1] [SIP Rule 310 §308] [SIP Rule 31]

e) Spillage, Carry-Out, Erosion, and/or Trackout: The Permittee shall do all of the following:

1) Install, maintain, and use a suitable trackout control device (examples of trackout control devices are described in Table 17 shown at the end of this permit condition) that controls and prevents trackout and/or removes particulate matter from tires and the exterior surfaces of haul trucks and/or motor vehicles that traverse such work site at all exits onto paved areas accessible to the public from both of the following
   a) All work sites with a disturbed surface area of two acres or larger; and.
   b) All work sites where 100 cubic yards of bulk materials are hauled on-site and/or off-site per day.
2) Cleanup spillage, carry-out, erosion, and/or trackout on the following time-schedule:
   a) Immediately, when spillage, carry-out, and/or trackout extends a cumulative distance of 50 linear feet or more; or
   b) At the end of the workday, for all other spillage, carry-out, erosion, and/or trackout

f) Soil Moisture: If water is the chosen control measure in an approved Dust Control Plan, the Permittee shall operate a water application system on-site (e.g., water truck, water hose) while conducting any earthmoving operations on disturbed surface areas 1 acre or larger, unless a visible crust is maintained or the soil is sufficiently damp to prevent loose grains of soil from becoming dislodged.

g) Easements, Rights-of-Way, and Access Roads for Utilities (Electricity, Natural Gas, Oil, Water and Gas Transmission) Associated with Sources that have a Non-Title V Permit, a Title V Permit, and/or a General Permit under the County Rules: The Permittee shall do at least one of the following:
   1) Restrict vehicular trips to no more than 20 per day per road; or
   2) Implement control measures as described in Table 3 shown at the end of this permit condition (Unpaved Haul/Access Roads).

h) Weed Abatement by Discing or Blading: The Permittee shall comply with all of the following weed abatement procedures by discing or blading:
   1) Apply water before weed abatement by discing or blading occurs: and
   2) Apply water while weed abatement by discing or blading is occurring; and
   3) Either:
      a) Pave, apply gravel, apply water, or apply a suitable dust suppressant, in compliance with Section 302.3 of County Rule 310 or Section 26.C.1.d of this permit.
      b) Establish vegetative ground cover in sufficient quantity, in compliance with Section 302.3 or County Rule 310 or Section 25.C.1.d of this permit, after weed abatement by discing or blading occurs.

D. MONITORING AND RECORDKEEPING FOR DUST GENERATING ACTIVITIES

1) The Permittee shall keep a daily written log recording the actual application or implementation of the control measures delineated in the approved Dust Control Plan (including records on any street sweeping, water applications, and maintenance of trackout control devices, gravel pads, fences, wind barriers, and tarps). Upon verbal or

written request by the Control Officer, the log or the records and supporting documentation shall be provided within 48 hours, excluding weekends. If the Control Officer is at the site where requested records are kept, records shall be provided without delay.

[County Rule 310 §502] [SIP Rule 310 §502]

2) Copies of approved Dust Control Plans, control measures implementation records, and all supporting documentation shall be retained at least five years from the date such records are established.

[County Rule 310 §503] [SIP Rule 310 §503]

3) The following test methods shall be followed:
   a) Dust Generating Operations: Opacity observations of a source engaging in dust generating operations shall be conducted in accordance with Appendix C, Section 3 of the Maricopa County Rules (Time Averaged Methods of Visual Opacity Determination of Emissions from Dust Generating Operations) except opacity observations for intermittent sources shall require 12 rather than 24 consecutive readings at 15-second intervals for the averaging time.
   b) Unpaved parking lot: Opacity Observations of any unpaved parking lot shall be conducted in accordance with Appendix C, Section 2.1 of the Maricopa County Rules (Test Methods for Stabilization for Unpaved Roads and Unpaved Parking Lots).
   c) Unpaved Haul/Access Road: Opacity observations of any unpaved haul/access road (whether at a work site that is under construction or at a work site that is temporarily or permanently inactive) shall be conducted in accordance with Appendix C, Section 2.1 of the Maricopa County Rules (Test methods for Stabilization-for unpaved Roads and Unpaved Parking Lots).

   [County Rule 310 §501.1, Appendix C]
   [SIP Rule 310 §501.1, Appendix C]

   d) Unpaved parking lot: Stabilization observations for unpaved parking lots shall be conducted in accordance with Appendix C, Section 2.1 (Test Methods for Stabilization-For Unpaved Roads and Unpaved Parking Lots) of the Maricopa County Rules. When more than 1 test method is permitted for a determination, an exceedance of the limits established in County Rule 310 determined by any of the applicable test methods constitutes a violation of County Rule 310.
   e) Unpaved Haul/Access Road: Stabilization observations for unpaved haul/access roads (whether at a work site that is under construction or at a work site that is temporarily or permanently inactive) shall be conducted in accordance with Appendix C, Section 2.1 (Test methods for Stabilization-for Unpaved Roads and Unpaved Parking Lots) of the County Rules. When more than 1 test method is permitted for a determination, an exceedance of the limits, established in Rule 310, determined by any of the applicable test methods constitutes a violation of County Rule 310.
   f) Open Area and Vacant Lot or Disturbed Surface Area: Stabilization observations for an open area and vacant lot or any disturbed surface area on which no activity is occurring (whether at a work site that is under construction or at a work site that is temporarily or permanently inactive) shall be conducted in accordance

with at least one of the techniques described in County Rule 310 §501.2.c.(1) through (7), as applicable. The Permittee shall be considered in violation of County Rule 310 if such inactive disturbed surface area is not maintained in a manner that meets at least 1 of the standards described in subsection 302.3 of County Rule 310, as applicable.

[County Rule 310 §501.2, Appendix C]
[SIP Rule 310 §501.2, Appendix C]

TABLES OF FUGITIVE DUST CONTROL MEASURES

Table 1
Vehicle Use In Open Areas And Vacant Lots

a. An owner and/or operator must implement one of the following control measures:
- **1.** Restrict trespass by installing signs; or
- **2.** Install physical barriers such as curbs, fences, gates, posts, signs, shrubs, and/or trees to prevent access to the area.

Table 2
Unpaved Parking Lots

a. An owner and/or operator must implement one of the following control measures:
- **1.** Pave;
- **2.** Apply and maintain gravel, recycled asphalt, or other suitable material, in compliance with Section 302.1 of County Rule 310; or
- **3.** Apply a suitable dust suppressant in compliance with Section 302.1 of County Rule 310.

b. Suggested additional control measure for contingency plans:
- **1.** Limit vehicle speeds to 15 m.p.h. on the site.

Table 3
Unpaved Haul/Access Roads

a. An owner and/or operator must implement one of the following control measures:
- **1.** Limit vehicle speed to 15 m.p.h or less and limit vehicular trips to no more than 20 day;
- **2.** Apply water, so that the surface is visibly moist in compliance with Section 302.2 of County Rule 310;
- **3.** Pave;
- **4.** Apply and maintain gravel, recycled asphalt, or other suitable material, in compliance with Section 302.2 of County Rule 310; or
- **5.** Apply a suitable dust suppressant, in compliance with Section 302.2 of County Rule 310.

Table 4
Open Areas And Vacant Lots

a. An owner and/or operator must implement one of the following control measures to comply with Section 302.3 of County Rule 310:
- **1.** Pave, apply gravel, or apply a suitable dust suppressant;
- **2.** Establish vegetative ground cover in sufficient quantity; or
- **3.** Restore area such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby undisturbed native conditions.

Table 5
Disturbed Surface Areas – Pre-Activity Work Practices

a. Before activity begins, an owner and/or operator must implement one of the following control measures:
- **1.** Pre-water site to depth of cuts, allowing time for penetration; or
- **2.** Phase work to reduce the amount of disturbed surface areas at any one time.

Table 6
Disturbed Surface Areas – Work Practices During Operations

a. During operations, an owner and/or operator must implement one of the following control measures:
- **1.** Apply water or other suitable dust suppressant, in compliance with Section 301 of County Rule 310;
- **2.** Apply water as necessary to maintain a soil moisture content at a minimum of 12%, as determined by ASTM Method D2216-98 or other equivalent method as approved by the Control Officer and the Administrator of EPA. For areas that have an optimum moisture content for compaction of less than 12%, as determined by ASTM Method D1557-91 (1998) or other equivalent method approved by the Control Officer and the Administrator of EPA, maintain at least 70% of the optimum soil moisture content; or
- **3.** Implement (a)(1) or (a)(2) above and construct fences or three-foot to five-foot high wind barriers with 50% or less porosity adjacent to roadways or urban areas to reduce the amount of windblown material leaving a site.

b. Suggested additional control measure for contingency plans:
- **1.** Limit vehicle speeds to 15 m.p.h on the work site.

Table 7
Disturbed Surface Areas – Temporary Stabilization (Up To 8 Months)
During Weekends, After Work Hours, And On Holidays

a. An owner and/or operator must implement one of the following control measures to comply with Section 302.3 of County Rule 310:
- **1.** Pave, apply gravel, or apply a suitable dust suppressant;
- **2.** Establish vegetative ground cover in sufficient quantity; or
- **3.** Implement (a)(1) or (a)(2), above, and restrict vehicular access to the area.

Table 8
Disturbed Surface Areas – Permanent Stabilization
(Required Within 8 Months Of Ceasing Dust Generating Operations)

a. An owner and/or operator must implement one of the following control measures to comply with Section 302.3 of County Rule 310:
- **1.** Pave, apply gravel, or apply a suitable dust suppressant;
- **2.** Establish vegetative ground cover in sufficient quantity; or
- **3.** Restore area such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby undisturbed native conditions.

Table 9
Blasting Operations

a. An owner and/or operator must implement all of the following control measures:
- **1.** In wind gusts above 25 m.p.h., discontinue blasting; and
- **2.** Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.

Table 10
Demolition Activities

a. An owner and/or operator must implement all of the following control measures:
- **1.** Stabilize demolition debris. Apply water to debris immediately following demolition activity; and
- **2.** Stabilize surrounding area immediately following demolition activity. Water all disturbed soil surfaces to establish a crust and prevent wind erosion of soil.

b. Suggested additional control measure for contingency plans:
- **1.** Thoroughly clean blast debris from paved and other surfaces following demolition activity.

Table 11
Bulk Material Handling Operations
Work Practices For Stacking, Loading, And Unloading Operations

a. An owner and/or operator must implement one of the following control measures:
- **1.** Spray material with water, as necessary, prior to stacking, loading, and unloading, and/or while stacking, loading, and unloading;
- **2.** Spray material with a dust suppressant other than water, as necessary, prior to stacking, loading, and unloading, and/or while stacking, loading, and unloading.

b. Suggested additional control measures for contingency plans:
- **1.** Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
- **2.** Remove material from the downwind side of the storage pile when safe to do so.
- **3.** Empty loader bucket slowly and keep loader bucket close to the truck to minimize the drop height while dumping.

Table 12
Open Storage Piles
When Not Conducting Stacking, Loading, And Unloading Operations

a. An owner and/or operator must implement one of the following control measures:
- **1.** Cover open storage piles with tarps, plastic, or other material such that the coverings will not be dislodged by wind;
- **2.** Apply water to maintain a soil moisture content at a minimum of 12%, as determined by ASTM Method D2216-98, or other equivalent methods approved by the Control Officer and the Administrator of the EPA; or for areas that have an optimum moisture content for compaction of less than 12%, as determined by ASTM Method D1557-91 (1998) or other equivalent methods approved by the Control Officer and the Administrator of EPA, maintain at least 70% of the soil moisture content;
- **3.** Meet the stabilization requirements described in Section 302.3 of County Rule 310; or
- **4.** Implement (a)(2) or (a)(3), above, and construct and maintain wind barriers, storage silos, or a three-sided enclosure with walls, whose length is no less than equal to the length of the pile,

whose distance from the pile is no more than twice the height of the pile, whose height is equal to the pile height, and whose porosity is no more than 50%.

Table 13
Bulk Material Hauling/Transporting Within The Boundaries Of The Work Site When Crossing A Paved Area Accessible To The Public While Construction Is Underway

a. An owner and/or operator must implement all of the following control measures:
- **1.** Load all haul trucks such that the freeboard is not less than 3 inches when crossing a paved area accessible to the public while construction is underway;
- **2.** Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate(s);
- **3.** Install a suitable trackout control device that controls and prevents trackout and/or removes particulate matter from tires and the exterior surfaces of haul trucks and/or motor vehicles that traverse such work site.

b. Suggested additional control measure for contingency plans:
- **1.** Limit vehicle speeds to 15 m.p.h. on the work site.

Table 14
Bulk Material Hauling/Transporting When On-Site Hauling/Transporting Within The Boundaries Of The Work Site But Not Crossing A Paved Area Accessible To The Public

a. An owner and/or operator must implement one of the following control measures:
- **1.** Limit vehicular speeds to 15 m.p.h. or less while traveling on the work site;
- **2.** Apply water to the top of the load in compliance with Section 301 of County Rule 310; or
- **3.** Cover haul trucks with a tarp or other suitable closure.

Table 15
Bulk Material Hauling/Transporting Off-Site Hauling/Transporting Onto Paved Areas Accessible To The Public

a. An owner and/or operator must implement all of the following control measures:
- **1.** Cover haul trucks with a tarp or other suitable closure;
- **2.** Load all haul trucks such that the freeboard is not less than 3 inches;
- **3.** Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate(s); and
- **4.** Before the empty haul truck leaves the site, clean the interior of the cargo compartment or cover the cargo compartment.

Table 16
Clean Up Of Trackout, Carry Out, Spillage, And Erosion

a. An owner and/or operator must implement one of the following control measures:
- **1.** Operate a street sweeper or wet broom with sufficient water, at the speed recommended by the manufacturer and at the frequency(ies) described in Section 308.3 of County Rule 310; or
- **2.** Manually sweep up deposits in compliance with Section 308.3 of County Rule 310.

Table 17
Trackout Control

a. An owner and/or operator must implement all of the following control measures:
- **1.** Immediately clean up trackout that exceeds 50 feet. All other trackout must be cleaned up at the end of the workday; and
- **2.** In accordance with Section 308.3(a), prevent trackout by implementing one of the following control measures:
  - **i.** At all access points, install a grizzly or wheel wash system.
  - **ii.** At all access points, install a gravel pad at least 30 feet wide, 50 feet long, and 6 inches deep, in compliance with Section 213 of County Rule 310.
  - **iii.** Pave starting from the point of intersection with a paved area accessible to the public and extending for a centerline distance of at least 100 feet and a width of at least 20 feet.

b. Suggested additional control measures for contingency plans:
- **1.** Clearly establish and enforce traffic patterns to route traffic over selected trackout control devices.
- **2.** Limit site accessibility to routes with trackout control devices in place by installing effective barriers on unprotected routes.
- **3.** Pave construction activity roadways as soon as possible.

Table 18
Weed Abatement By Discing Or Blading

a. An owner and/or operator must implement all of the following control measures:
- **1.** Pre-water site;
- **2.** Apply water while weed abatement by discing or blading is occurring; and
- **3.** Stabilize area by implementing either one of the following:
  - **i.** Pave, apply gravel, apply water, or apply a suitable dust suppressant, in compliance with Section 302.3 of County Rule 310, after weed abatement by discing or blading occurs; or
  - **ii.** Establish vegetative ground cover in sufficient quantity, in compliance with Section 302.3 of County Rule 310, after weed abatement by discing or blading occurs.

b. Suggested additional control measures for contingency plans
- **1.** Limit vehicle speeds to 15 m.p.h. during discing and blading operations.

Table 19
Easements, Rights-Of-Way, And Access Roads For Utilities (Electricity, Natural Gas, Oil, Water, And Gas Transmission) Associated With Sources That Have A Non-Title V Permit, A Title V Permit, And/Or A General Permit Under These Rules

a. An owner and/or operator must implement one of the following control measures:
- **1.** Inside the PM10 nonattainment area, restrict vehicular speeds to 15 m.p.h. and vehicular trips to no more than 20 per day per road;
- **2.** Outside the PM10 nonattainment area, restrict vehicular trips to no more than 20 per day per road; or
- **3.** Implement control measures, as described in Table 3 (Unpaved Haul/Access Roads) of County Rule 310.

Note: For Tables 20 & 21, control measures in [brackets] are to be applied only to dust generating operations outside the nonattainment area.

Table 20
Wind Event Control Measures-Dust Generating Operations

a. An owner and/or operator must implement one of the following control measures:
- **1.** Cease dust generating operations for the duration of the condition/situation/event when the 60-minute average wind speed is greater than 25 m.p.h. and if dust generating operations are ceased for the remainder of the work day, stabilize the area;
- **2.** Apply water or other suitable dust suppressant at least twice [once] per hour, in compliance with Section 301 of County Rule 310;
- **3.** Apply water as necessary to maintain a soil moisture content at a minimum of 12%, as determined by ASTM Method D2216-98 or other equivalent method as approved by the Control Officer and the Administrator of EPA. For areas that have an optimum moisture content for compaction of less than 12%, as determined by ASTM Method D1557-91 (1998) or other equivalent method approved by the Control Officer and the Administrator of EPA, maintain at least 70% of the optimum soil moisture content; or
- **4.** Implement (a)(2) or (a)(3), above, and construct fences or three-foot to five-foot high wind barriers with 50% or less porosity adjacent to roadways or urban areas to reduce the amount of wind-blown material leaving a site.

Table 21
Wind Event Control Measures-Temporary Disturbed Surface Areas
(After Work Hours, Weekends, Holidays)

a. An owner and/or operator must implement one of the following control measures:
- **1.** Uniformly apply and maintain surface gravel or dust suppressants, in compliance with Section 302.3 of County Rule 310;
- **2.** Apply water to all disturbed surface areas 3 times per day. If there is any evidence of wind-blown dust, increase watering frequency to a minimum of 4 times per day;
- **3.** Apply water on open storage piles at least twice [once] per hour, in compliance with Section 302.3 of County Rule 310; or
- **4.** Cover open storage piles with tarps, plastic, or other material such that wind will not remove the covering(s).

b. Suggested additional control measures for contingency plans:
- **1.** Implement a combination of the control measures listed in (a)(1) through (a)(4), above.

26. PERMIT CONDITIONS FOR ABRASIVE BLASTING:

A. OPERATIONAL LIMITATIONS

1) Confined Blasting

All abrasive blasting operations shall be performed in a confined enclosure consisting of 3 or 4 sides and a roof or cover, unless one of the following conditions are met, in which case unconfined blasting may be performed if it is conducted in accordance with the unconfined blasting section of these Permit Conditions.

a) The item to be blasted exceeds 8 ft. in any one dimension, or

b) The surface being blasted is fixed in a permanent location, cannot easily be moved into a confined enclosure, and the surface is not normally dismantled or moved prior to abrasive blasting.

The Permittee shall not use forced air exhaust an abrasive blasting enclosure unless a certified blasting media is used.

[County Rule 312 §§301 & 303] [locally enforceable only]

2) Unconfined Blasting

If the Permittee performs unconfined blasting, then at least one of the following control measures shall be used:

a) Wet abrasive blasting,
b) Vacuum blasting, or
c) Dry abrasive blasting, provided that all of the following conditions are met:
   (1) Perform only on a metal substrate.
   (2) Use only certified abrasive for dry unconfined blasting.
   (3) Blast only paint that is lead free (i.e. the lead content is less than 0.1percent).
   (4) Perform the abrasive blasting operation directed away from unpaved surfaces.
   (5) Use the certified abrasive not more than once unless contaminants are separated from the abrasive through filtration and the abrasive conforms to its original size.

[County Rule 312 §301] [SIP Rule 312 §302.4]

3) Controls Required

Any abrasive blasting operation shall use at least one of the following controls:

a) Confined blasting
b) Wet abrasive blasting
c) Hydroblasting
d) A control measure that is determined by the Control Officer to be equally effective to control particulate emissions.

[SIP Rule 312 §302]

4) Opacity Limitation

The Permittee shall not discharge into the atmosphere from any abrasive blasting operation any air contaminant for an observation period or periods aggregating more than three minutes in any sixty minute period an opacity equal to or greater than 20 percent.

[County Rule 312 §305] [SIP Rule 312 §301]

An indicated excess will be considered to have occurred if any cumulative period of 15-second increments totaling more than three minutes within any sixty minute period was in excess of the opacity standard.

[County Rule 312 §305] [locally enforceable only]

5) Wind Event
The Permittee shall not conduct unconfined abrasive blasting when the 60-minute average wind speed is greater than 25 miles per hour.
[County Rule 312 §306] [SIP Rule 312 §302.4]

6) Traffic Makers
Surface preparation for raised traffic delineating markers and pavement marking removal using abrasive blasting operations shall be performed by wet blasting, hydroblasting or vacuum blasting. Dry blasting may be performed using only certified abrasives when:
a) Removing pavement markings of less than 1,000 square feet
b) Performing surface preparation for raised traffic delineating markers of less than 1,000 square feet.
[County Rule 312 §307] [SIP Rule 312 302.4]

7) Work Practices
a) Unconfined Blasting: The owner or operator shall clean up spent abrasive material with a potential to be transported during a wind event and, until removal occurs, shall, at a minimum, meet the provisions of Rule 310 of these rules regarding work practices.
[County Rule 312 §308] [SIP Rule 312 §302.4]
b) Confined Blasting: At the end of the work shift the owner or operator shall clean up spillage, carry-out, and/or trackout of any spent abrasive material with a potential to be transported during a wind event.
[County Rule 312 §308] [locally enforceable only]

B. MONITORING/RECORDKEEPING

At a minimum, the Permittee shall keep the following records onsite that are applicable to all abrasive blasting operations:
1) The date the blasting occurs,
2) The blasting equipment that is operating,
3) A description of the type of blasting.
4) The type and amount of solid abrasive material consumed on a monthly basis. Include name of certified abrasive used, as applicable.
5) Material Safety Data Sheets (MSDS) or results of any lead testing that was performed on paint that is to be removed via unconfined blasting, as applicable.
[County Rule 312 §501] [County Rule 210 §302.1c]

C. REPORTING

The Permittee shall include the following information in each Semiannual Compliance Certification and Monitoring Report:
1) Whether abrasive blasting occurred during the reporting period,
2) Whether the blasting was confined or unconfined, and
3) If the blasting was unconfined, the control measure used to meet the requirements of these permit conditions.

[County Rule 210 § 302.1.e.(1)]

D. COMPLIANCE DETERMINATION:

Compliance with the abrasive blasting requirements of this permit shall be determined according to County Rule 312, Section 503. Opacity from abrasive blasting shall be determined according to Rule 312, Section 505.

[County Rule 312 §503 and §505]

27. PERMIT CONDITIONS FOR THE COLD DEGREASING AND WIPE CLEANING:

A. OPERATIONAL LIMITATIONS/STANDARDS:

1) All cleaning machines shall be one of the following types:
   a) Batch loaded cold cleaners with remote reservoir;
   b) Batch loaded cold cleaners without a remote reservoir (such as solvent dip tank);
   c) A system that is operated with only low VOC cleaners (A low VOC cleaner is any solution or homogeneous suspension that, as used, contains less than 50 grams of VOC per liter of material (0.42 lb VOC/gal) or is at least 95% water by weight or volume as determined by an applicable test method in Section 502 of County Rule 331); OR
   d) A sealed system. A sealed system that is an airtight or airless cleaning system which is operated according to the manufacturer's specifications and, unless otherwise indicated by the manufacturer, meets all of the following requirements:
      i) Has a door or other pressure-sealing apparatus that is shut during each cleaning and drying cycle.
      ii) Has a differential pressure gauge that always indicates the pressure in the sealed chamber when occupied or in active use.
      iii) Any associated pressure relief device(s) shall be so designed and operated as to prevent liquid cleaning-solvents from draining out.
   e) This permit does not address the use of a VOC emission control system for solvent cleaning, or the use of a cleaning solvent that is heated, agitated, or non-conforming. The Permittee, therefore, shall follow appropriate permit revision procedures in order to conduct cleaning with a heated, agitated, or non-conforming solvent or to conduct solvent cleaning that would require emission control equipment in order to meet the requirements of this permit and of County Rule 331.
   f) Only the solvent handling requirements and monitoring and recordkeeping requirements of this permit condition apply to wipe cleaning operations.
   g) Only the solvent handling, equipment, monitoring/recordkeeping, and reporting requirements of this permit condition apply to small cleaners (liquid surface area of 1 square foot or less, or maximum capacity of one gallon or less).

[County Rule 210 §302.1] [County Rule 331 §308.2a and §308.2.b]

B. SOLVENT HANDLING REQUIREMENTS:

1) All cleaning-solvent, including solvent soaked materials, shall be kept in closed leakfree impervious containers that are opened only when adding or removing material.

a) Porous or absorbent materials used for wipe cleaning shall be stored in closed containers when not in use.
b) Each container shall be clearly labeled with its contents.

2) If any cleaning-solvent escapes from a container:
a) Wipe up or otherwise remove immediately if in accessible areas.
b) For areas where access in not feasible during normal production, remove as soon as reasonably possible.

3) Unless records show that VOC-containing cleaning material was sent offsite for legal disposal, it will be assumed that it evaporated on site.

[County Rule 331 §301] [SIP Rule 331 §301]

C. EQUIPMENT REQUIREMENTS FOR ALL CLEANING MACHINES:

1) The Permittee shall provide a leakfree impervious container (degreaser) for the solvents and the articles being cleaned.
a) The VOC-containment portion shall be impervious to VOC-containing liquid and vapors.
b) No surface of any freeboard required by this permit shall have an opening or duct through which VOC can escape to the atmosphere except as required by OSHA.

[County Rule 331 §302.1] [SIP Rule 331 §302.1]

2) The Permittee shall maintain and operate all cleaning machine equipment required by this permit.

[County Rule 331 §302.2] [SIP Rule 331 §302.2]

D. SPECIFIC OPERATING AND SIGNAGE REQUIREMENTS FOR CLEANING MACHINES:

1) The Permittee shall conform to the following operating requirements when cleaning with cleaning-solvents other than Low-VOC Cleaners:
a) Comfort fans shall not be located or positioned in such a way as to direct airflow across the opening of any cleaning device.
b) Do not remove any device designed to cover the solvent unless processing work in the cleaning machine or maintaining the machine;
c) Drain cleaned parts for at least (15) fifteen seconds after cleaning or until dripping ceases, whichever is later;
d) If using a cleaning-solvent spray system:
(1) Use only a continuous, undivided stream (not a fine, atomized, or shower type spray).
(2) Pressure at the orifice from which the solvent emerges shall not exceed (10) ten pounds per square inch, gauge (psig) and shall not cause liquid solvent to splash outside the solvent container.
(3) In an in-line cleaning machine, a shower-type spray is allowed, provided that the spraying is conducted in a totally confined space that is separated from the environment.

(4) Exceptions to the foregoing subsections (1), (2), and (3) are provided for in Special Non-vapor Cleaning Situations in the section titled the same below.

e) The Permittee shall not cause agitation of a cleaning-solvent in a cleaning machine by sparging with air or other gas. Covers shall be placed over ultrasonic cleaners when the cleaning cycle exceeds (15) fifteen seconds;

f) The Permittee shall not place porous or absorbent materials in or on a cleaning machine. This includes, but is not limited to, cloth, leather, wood, and rope. No object with a sealed wood handle, including a brush, is allowed;

g) The ventilation rate at the cleaning machine shall not exceed 65 cubic feet per minute per square foot of evaporative surface (20 cubic meters per minute per square meter), unless that rate must be changed to meet a standard specified and certified by a Certified Safety Professional, a Certified Industrial Hygienist, or a licensed professional engineer experienced in ventilation, to meet health and safety requirements;

h) Limit the vertical speed of mechanical hoists moving parts in and out of the cleaning machine to a maximum of 2.2 inches per second and 11 feet per minute (3.3 meters per minute);

i) The Permittee shall prevent cross contamination of solvents regulated by Section 304 of Rule 331 with solvents that are not so regulated. Use signs, separated work-areas, or other effective means for this purpose. This includes those spray gun cleaning solvents that are regulated by another rule.

[County Rule 331 §303] [SIP Rule 331 §303]

2) When using cleaning-solvent, other than Low-VOC Cleaner, in any solvent cleaning machine (degreaser) or dip tank, the Permittee shall provide the following signage requirements on the machine, or within 3¼ feet (1 meter) of the machine, a permanent, conspicuous label, or placard which includes, at a minimum, each of the following applicable instructions, or its equivalent:

a) "Keep cover closed when parts are not being handled." (This is not required for remote reservoir cleaners.)

b) "Drain parts until they can be removed without dripping."

c) "Do not blow off parts before they have stopped dripping."

d) "Wipe up spills and drips as soon as possible; store used spill rags [or 'wiping material'] in covered container."

e) "Don't leave cloth or any absorbent materials in or on this tank."

f) For cleaning machines with moving parts such as hoists, pumps, or conveyors, post: "Operating instructions can be obtained from _____" listing a person or place where the instructions are available.

[County Rule 331 §303] [SIP Rule 331 §303]

E. SOLVENT SPECIFICATIONS FOR NON-VAPOR CLEANING AND DEGREASING:

All cleaning solvents, except Low-VOC Cleaners, used in non-boiling cleaning machines shall comply with County Rule 331, Section 304.1 or 304.2 as follows:

1) Use a cleaning solvent having a total VOC vapor pressure at 68°F (20°C) not exceeding 1 millimeter of mercury column as determined by the standards described in Section 500 of County Rule 331.

2) Use a sealed system that meets the requirements of County Rule 331, Section 304.3.

[County Rule 331 §304] [SIP Rule 331 §304]

F. NON-VAPOR BATCH CLEANING MACHINES

1) The Permittee shall equip each batch cleaning machine with remote reservoir, including the cabinet type(s), with the following:
   a) A sink-like work area or basin which is sloped sufficiently towards the drain so as to prevent pooling of cleaning-solvent.
   b) A single, unimpeded drain opening or cluster of openings served by a single drain for the cleaning-solvent to flow from the sink into the enclosed reservoir. Such opening(s) shall be contained within a contiguous area not larger than 15.5 square inches (100 square centimeters).
   c) Provide a means for drainage of cleaned parts such that the drained solvent is returned to the cleaning machine.

   Low VOC cleaners (as defined in County Rule 331) are exempt from the above requirements.

   [County Rule 331 §305] [SIP Rule 331 §305]

2) The Permittee shall equip each batch cleaning machine without a remote reservoir with all of the following:
   a) Have and use an internal drainage rack or other assembly that confines within the freeboard all cleaning-solvent dripping from parts and returns it to the hold of the cleaning machine (degreaser).
   b) Have an impervious cover which when closed prevents cleaning-solvent vapors in the cleaning machine from escaping into the air/atmosphere when not processing work in the cleaning machine. The cover shall be fitted so that in its closed position the cover is between the cleaning-solvent and any lip exhaust or other safety vent, except that such position of cover and venting may be altered by an operator for valid concerns of flammability established in writing and certified to by a Certified Safety Professional or a Certified Industrial Hygienist to meet health and safety requirements.
   c) The freeboard height shall be not less than 6 inches (15.2 centimeters). Freeboard height for batch cleaning machines is the vertical distance from the solvent/air interface to the least elevated point of the top-rim when the cover is open or removed, measured during idling mode.
   d) The freeboard zone shall have a permanent, conspicuous mark that locates the maximum allowable solvent level which conforms to the applicable freeboard requirements.

   Low VOC cleaners (as defined in County Rule 331) are exempt from the above requirements.

   [County Rule 331 §305.2] [SIP Rule 331 §302.2]

G. SPECIAL NON-VAPOR CLEANING SITUATIONS

1) When blasting or misting with conforming solvent, the Permittee shall operate and equip the device(s) as follows:
   a) The device shall have internal drainage, a reservoir or sump, and a completely enclosed cleaning chamber, designed so as to prevent any perceptible liquid from emerging from the device; and
   b) The device shall be operated such that there is no perceptible leakage from the device except for incidental drops from drained, removed parts.

[County Rule 331 §307.1] [SIP Rule 331 §307.1]

2) The Permittee shall use a sealed system for all blasting or misting with a non-conforming solvent.

[County Rule 331 §307.2] [SIP Rule 331 §307.2]

3) Cleaning systems using cleaning-solvent that emerges from an object undergoing flushing with a visible mist or at a pressure exceeding 10 psig, shall comply as follows;
   a) For conforming solvents, use a containment system that is designed to prevent any perceptible cleaning-solvent liquid from becoming airborne outside the containment system, such as a completely enclosed chamber.
   b) Use a sealed system for non-conforming solvents.

[County Rule 331 §307.3]

H. MONITORING/RECORDKEEPING:

1) The Permittee shall maintain a current list of cleaning-solvents; state the VOC-content of each in pounds VOC per gallon of material or grams per liter of material. For any cleaning solvent subject to solvent specifications for non-vapor cleaning and degreasing (VOC vapor pressure not exceeding 1 millimeter of mercury column), the facility shall maintain documentation showing the total VOC vapor pressure of each such solvent. Documentation shall include a manufacturer's technical data sheet, material safety data sheet or actual test results.

2) By the 15th day of each calendar month, the Permittee shall record the amount of cleaning-solvent used for the previous month. The record shall include the type and amount of each make-up and all other cleaning-solvent.

3) Annually the Permittee shall document the use of concentrate that is used only in the formulation of Low VOC Cleaner.

4) Permittee need not keep a record of a cleaning substance that is made by diluting a concentrate with water or non-precursor compound(s) to a level that qualifies as a low VOC cleaner if records of the concentrate usage are kept in accordance with this permit.

5) The Permittee may, for purposes of recording usage, give cleaning-solvents of similar VOC content a single group-name, distinct from any product names in the group. The

total usage of all products in that group is then recorded under just one name. (In such case the Permittee shall also keep a separate list that identifies the product names of the particular solvents included under the group name.) To the group name shall be assigned the highest VOC content among the members of that group, rounded to the nearest 10th of a pound of VOC per gallon of material, or to the nearest gram VOC per liter of material.

[County Rule 331 §501] [SIP Rule 331 §501]

I. REPORTING:

The Permittee shall include the following information in each Semiannual Compliance Certification and Monitoring Report:

1) certification that the operational requirements, specifically applicable to the Permittee's type of cleaning, continue to be in compliance;
2) a summary of the listed cleaning-solvents currently used at the facility and the VOC-content of each in VOC per gallon of material or grams per liter of material;
3) certification that monthly and annual recordkeeping was performed as directed in the monitoring/recordkeeping requirements above;
4) a summary of any testing that may have been performed during the period;
5) quantity of each cleaning solvent used; and
6) any new or updated Material Safety Data Sheet.

[County Rule 210 302.1e(1)]

28. PERMIT CONDITIONS FOR CUTBACK AND EMULSIFIED ASPHALT:

A. OPERATIONAL LIMITATIONS

1) The VOC content of asphalt materials shall be limited as follows:
   a) The Permittee shall not use or apply the following materials for paving, construction, or maintenance of highways, streets, driveways, parking lots, roads, nor shall they be applied onto soil and earthworks:
      (1) Rapid cure cutback asphalt.
      (2) Any cutback asphalt material, road oils, or tar which contains more than 0.5 percent by volume VOCs which evaporate at 500^0F (260^0C) or less using ASTM Test Method D 402-76.
      (3) Any emulsified asphalt or emulsified tar containing more than 3.0 percent by volume VOCs which evaporate at 500^0F (260^0C) or less as determined by ASTM Method D 244-89.

      [County Rule 340 §301] [SIP Rule 340 §301]
   b) The Permittee shall not store for use any emulsified or cutback asphalt product which contains more than 0.5 percent by volume solvent-VOC unless such material lot includes a designation of solvent-VOC content on data sheet(s) expressed in percent solvent-VOC by volume.

      [County Rule 340 §303] [SIP Rule 340 §303]

2) The VOC content limitations of this Permit Condition do not apply to the following:

a) Asphalt that is used solely as a penetrating prime coat and which is not a rapid cure cutback asphalt. Penetrating prime coats do not include dust palliatives or tack coats.

[County Rule 340 §302.1] [SIP Rule 340 §302.1]

b) The Permittee may use up to 3.0 percent solvent-VOC by volume for batches of asphalt rubber which cannot meet paving specifications by adding heat alone only if request is made to the Control Officer, who shall evaluate such requests on a case-by-case basis. The Permittee shall keep complete records and full information is supplied including savings realized by using discarded tires. The Permittee shall not exceed 1100 lbs (500 kg) usage of solvent-VOC in asphalt rubber in a calendar year unless the Permittee can demonstrate that in the previous 12 months no solvent-VOC has been added to at least 95 percent by weight of all the asphalt rubber binder made by the Permittee or caused to be made for the Permittee. This Permit Condition does not apply to batches which yield 0.5 percent or less solvent-VOC evaporated using the test in County Rule 340 § 502.1.

[County Rule 340 §302.3] [SIP Rule 340 §302.3]

B. MONITORING/RECORDKEEPING

The Permittee shall keep daily records of the amount and type of asphaltic/bituminous material containing more than 0.5 percent by volume solvent-VOCs which is used at the facility. Records must show the solvent-VOC content of this material.

Material Safety Data Sheets (MSDS) or technical data sheets shall be kept available for any asphalt materials used at the facility. Records must be maintained in a readily accessible location and must be made available to the Control Officer upon request.

[County Rule 340 §501] [SIP Rule 340 §501] [County Rule 210 §302.1.c.(2)]

C. REPORTING

The Permittee shall include the following information in the Semiannual Compliance Certification and Monitoring Report required by these Permit Conditions:

1) A statement as to whether the recordkeeping requirements of these Permit Conditions relating to asphalt usage were met.
2) A listing of any asphalt used that exceeded the VOC content limitations of Permit Condition A. 1) of this section and whether the exceedance was covered by an exemption covered by Permit Condition A. 2) of this section or whether it was a deviation from the requirements of this Permit Condition.

[County Rule 210 §302.1.e.(1)]

D. TESTING

If required by the Control Officer the applicable testing procedures contained in County Rule 340 § 502 and SIP Rule 340 § 502 shall be used to determine compliance with these Permit Conditions.

[County Rule 340 §502] [SIP Rule 340 §502]

APPENDIX A

EQUIPMENT LIST

New Harquahala Generating Company, LLC (NHGC)

Equipment List

Major Emitting Equipment

1) Three Combined Cycle Units (CTG 1, CTG 2 and CTG 3), each with a heat recovery steam generator (HRSG) and a condensing reheat steam turbine and electrical generator.

   Each combined cycle unit consists of the following:
   a) Siemens-Westinghouse 501G combustion turbine operating in combined-cycle mode with a nameplate rating of 240 megawatts electric and fueled by pipeline quality natural gas only with steam injection power augmentation capability.
   b) Reheat condensing steam turbine (121 MW).
   c) Selective Catalytic Reduction (SCR) nitrogen oxides emissions control system and an Oxidation Catalyst system for controlling carbon monoxide emissions.
   d) Continuous emissions monitor (CEM) system that records at least oxides of nitrogen (NOx), carbon monoxide (CO), and oxygen (O_2) content of the System exhaust.
   e) An exhaust stack with height 180 feet above plant grade and inside diameter of 19 feet.

2) Wet Cooling Towers
   Two nine-cell wet cooling tower, with each cell rated at 15,000 gallons per minute recirculation rate (135,000 gallons per minute total for the cooling tower) and height 47 feet above plant grade.

3) Emergency Diesel Engines
   a) One 450 horsepower diesel-fueled engine to drive the firewater pump.
   b) One 1,500 kilowatt diesel-fueled emergency generator to provide power to lube oil pumps and critical project systems.

Other Emitting Equipment

1) Chemical Storage Equipment (see Appendix B)

2) Petroleum Storage Tanks (See Appendix B)

3) Solvent Degreasing
   a) One batch solvent cold cleaning machine (non-vapor)

APPENDIX B

INSIGNIFICANT ACTIVITIES

New Harquahala Generating Company, LLC (NHGC)

NHGC Insignificant Activities List

Chemical Storage		
Description & Storage Location	**Name of Chemical Substance**	**Area in Which Material is Used**
Two 1,550 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B	Depositrol (phosphoric acid) BL 5323	Cooling Tower
The tank is located south of the gas compressor building	Ammonia 60,000 gallon storage tank (<20% as ammonia)	SCR Catalyst in HRSG
1,000 gal. Tank in Zero Liquid Discharge area	Calcium Chloride (38%)	Water Treatment
Two 1,550 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B	Flogard POT 6100	Cooling Tower
3,000 gal. Tank in Zero Liquid Discharge area	Klaraide PC1192	Water Treatment
Two 8,500 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B.	Liquichlor (12% Sodium Hypochlorite, sodium hydroxide and sodium chloride)	Cooling Towers
10,000 gal. Tank in Zero Liquid Discharge area	Magnesium chloride (30%)	Water Treatment
One 2,000 gal tank in US Filter area	Sodium Hypochlorite (12.5%)	Water Treatment
Gas Compression (2 compressors, each hold 660 gallons)	Compressor oil	Gas Compressor
19 transformers located throughout site	Dielectric Fluid in Non-PCB Transformers	19 transformers located throughout site
Switchyard and Transformer Breakers445 lb. Container Total	SF_6 (Sulfur Hexafluoride)	Switch Yard
280 Gal tote in Zero Liquid Discharge	Kleen mtc 103	Zero Liquid Discharge
Two 8,000 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B; One 250 Gal tank in the USF skid.	Sulfuric Acid	Cooling Towers and water treatment
Zero Liquid Discharge Area - 280 Gallon tote Container Size	Biomate MBC781	Zero Liquid Discharge
Two 300 Gal Totes	Caustic Soda (33%)	Water Treatment
Three 180 gal. Totes	Control OS 5035 (hydrazine)	HRSGs
300 gal. Tote in Zero Liquid Discharge area.	Evaporator Anti-scale Depositrol BL 5306	Water Treatment
280 gal. Tote.	Hypersperse MDC150	Water Treatment

Two 280 gal. Totes in US Filter Area	Optisperse HP3100 (phosphate) 560 gallons	Water Treatment
280 gal. Tote in Zero Liquid Discharge area	Sodium Bisulfate	Water Treatment
280 gal. Tote.	Sodium Bisulfate BetzDearBorn DCL 30	ZLD
280 gal. Tote.	SoliSep MPT 150	Water Treatment
Two 280 Gal Above Ground Tanks Located West of Cooling Tower A and East of Cooling Tower B	Spectrus NX1100 (Magnesium Nitrate and Magnesium Chloride)	Cooling Tower
Three 180 gal. Totes	Steamate NA1321 (Aluminum Hydroxide 19%)	HRSGs
280 gal. totes in Zero Liquid Discharge area	Foamtrol AF2230 (Oxirane/methoxirane polymer with butyl ether)	Zero Liquid Discharge
Two 280 gal. Totes	Polyfloc AE 1125	Water Treatment
280 gal. Tote	Polyfloc AE1125 (Isoparaffinic petroleum distillate)	Water Treatment
400 gal. Tote	Polyfloc AE1701 (Isoparaffinic petroleum distillate and ammonium acetate)	Water Treatment
Three 55 gal. Drums	Corrshield (Sodium molybdate and Sodium Nitrite)	Closed Cooling Water
55 Gal. drum in Zero Liquid Discharge	Kleen mtc 511	Zero Liquid Discharge
55 Gal. drum in Zero Liquid Discharge	Optisperse	Zero Liquid Discharge
Petroleum Storage Tanks		
Tank Designation	**Description / Contents**	**Tank/Container Content (Gallons)**
1	Emergency Diesel Generator AST / Diesel	1350 gallon
2	Emergency Diesel Fire Pump AST / Diesel	500 gallon
3	Diesel AST / Diesel	500 gallon diesel
4	Gas Turbine Lube Oil Reservoir / Lube Oil	5,000 gallon (3 on-site)
5	Steam Turbine Lube Oil Reservoir / Lube Oil	3,600 gallon (3 on-site)
6	Gas Turbine Control Oil Reservoir / Lube Oil	100 gallon (3 on-site)
7	Steam Turbine Hydraulic Oil Reservoir / Hydraulic Oil	200 gallon (3 on-site)
8	Gas Turbine Starting Package Oil Reservoir /	1,800 gallon (3 on-site)

	Oil	
9	Oil-Water Separator / Oil; petroleum products	1,880 gallon (3 on-site)
10	Used Oil Tank / Oil; petroleum products	385 gallon
11	Main Transformer / Mineral Oil (Non-PCB)	25,620 gallon (3 on-site)
12	Auxiliary Transformer / Mineral Oil (Non-PCB)	2,715 gallon (3 on-site)
13	Oil Rack and Oil Cabinet Lube Oil and petroleum products	1,605 (55-gallon and smaller containers)
Other Activities		
Designation	**Description**	
Laboratory Fume Hood	Hanson Model 3SA-47, 142 FPM Exhaust	
Power Washer	Small internal combustion (IC) engine < 50 hp	
Lime Storage Silo	Storage Silo controlled by fabric filter; Pneumatically loaded by truck	
Soda Ash Storage Silo	Storage Silo controlled by fabric filter; Pneumatically loaded by truck	

APPENDIX C

PERMIT SHIELD APPLICABLE REQUIREMENTS

New Harquahala Generating Company, LLC (NHGC)

Identified below are all federal, state and local air pollution control requirements applicable to the Permittee at the time the permit is issued. Compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issuance included in the Appendix B "Permit Shield" of this permit.

For each part, subpart, section, and subsection reference listed, all subsequent sections are assumed applicable. All other subparts or sections not listed are not applicable.

County Requirements

Maricopa County
Air Pollution Control Regulations

Regulation I General Provisions

Rule 100		**General Provisions and Definitions (3/15/06 revision)**
	§104	Circumvention
	§105	Right of Inspection of Premises
	§106	Right of Inspection of Records
	§301	Air Pollution Prohibited
	§501	Reporting Requirements
	§502	Data Reporting
	§503	Emission Statements Required as Stated in the Act
	§504	Retention of Records
	§505	Annual Emissions Inventory Report

Rule 130		**Emergency Provisions (07/26/00 revision)**
	§400	Administrative Requirements

Rule 140		**Excess Emissions (9/5/01 revision)**
	§400	Administrative Requirements
	§500	Monitoring and Records

Regulation II Permits and Fee

Rule 200		**Permit Requirements (8/22/01 revision)**
	§301	Permits Required
	§302	Title V Permit
	§305	Earth Moving Permit
	§306	Permit to Burn
	§310	Prohibition – Permit Modification
	§311	Permit Posting Required

Rule 210		**Title V Permit Provisions (05/07/03 revision)**
	§402	Permit Term
	§403	Source Changes Allowed without Permit Revisions
	§404	Administrative Permit Revisions
	§405	Minor Permit Revisions
	§406	Significant Permit Revisions
	§407	Permit Shields

Rule 240	**Title V Permit Provisions (05/07/03 revision)**
§308.1a, d, e	Best Available Control Technology (BACT); Permit Shield applies only to BACT requirements contained in this Permit

Rule 270		**Performance Tests (11/15/93 revision)**
	§301	Performance Tests Required (approved test methods)
	§301.1	Applicable Procedures and Testing Methods
	§301.2	Opacity determined by Reference Method 9 of the AZ Testing Manual
	§401	Performance Tests Required
	§402	Testing Criteria
	§403	Testing Conditions
	§404	Notice of Testing
	§405	Testing Facilities Provided
	§406	Minimum Testing Required

Rule 270		**Performance Tests (11/15/93 revision)**
	§407	Compliance with the Emission Limits
	§408	Additional Testing

Regulation III Control of Air Contaminants

Rule 300		**Visible Emissions (2/7/01 revision)**
	§301	Limitations – Opacity/General: Opacity ≤ 20%
	§302	Exceptions
	§501	Compliance Determination – Opacity
	§502	Compliance Determination – Opacity of Visible Emissions from Intermittent Sources

Rule 310		**Fugitive Dust (4/7/04 revision)**
	§301	Opacity Limitation for Dust Generating Operations
	§302	Stabilization Requirements for Dust Generating Operations
	§303	Dust Control Plan Required
	§304	Elements of a Dust Control Plan
	§305	Dust Control Plan Revisions
	§306	Control Measures
	§307	Project Information Sign
	§308	Work Practices
	§401	Dust Control Plan Posting
	§501	Compliance Determination
	§502	Recordkeeping
	§503	Records Retention
	§504	Test Methods Adopted by Reference

Rule 312		**Abrasive Blasting (7/2/03 revision)**
	§301	Limitations
	§302	Requirements for Unconfined Blasting
	§303	Requirements for Confined Blasting

Rule 312		**Abrasive Blasting (7/2/03 revision)**
	§304	Opacity Limitation
	§305	Wind Event
	§306	Wind Event
	§307	Traffic Markers
	§308	Work Practices
	§501	Recordkeeping and Reporting
	§502	Records Retention
	§503	Compliance Determination
	§504	Certified Abrasives List Adopted by Reference
	§505	Opacity Observations
	§506	Test Methods Adopted by Reference

Rule 320		**Odors and Gaseous Air Contaminants (7/2/03 revision)**
	§300	Standards
	§302	Material Containment Required
	§303	Reasonable Stack Height Required
	§305	Permit Conditions – High Sulfur Oil

Rule 331		**Solvent Cleaning (4/21/04 revision)**
	§ 301	Solvent Handling Requirements
	§ 302	Equipment Requirements for All Cleaning Machines
	§ 303	Specific Operating and Signage Requirements for Cleaning Machines
	§ 304	Solvent Specifications for Non-vapor Cleaning and Degreasing
	§ 305	Non-Vapor Batch Cleaning Machines
	§ 306	Non-Vapor In-Line Cleaning
	§ 307	Special Non-Vapor Cleaning Situations
	§ 501	Recordkeeping and Reporting
	§ 502	Compliance Determination and Test Methods

Rule 335		**Architectural Coatings (7/13/88 revision)**
	§301	Prohibition – Bituminous Pavement Sealers
	§303	Final Limits – Non-Flat Architectural Coatings
	§304	Limits – Flat Architectural Coatings
	§305	Limits – Specialty Coating
	§306	Exemptions – Specific Use Coatings
	§307	Exemption – Small Containers

Rule 340		**Cutback and Emulsified Asphalt (9/21/92 revision)**
	§ 301	Limitations
	§ 501	Recordkeeping and Reporting

Rule 360		**New Source Performance Standards (3/15/06)**
	§301	Refer to the Permit Shield section which addresses Federal Requirements.

Regulation VI Emergency Episodes

Rule 600		**Emergency Episodes (7/13/88 revision)**
	§302	Control Actions

Appendices

Appendix C		**(4/7/04 revision)**
	Section 2	Test Methods for Stabilization
	Section 3	Visual Determination of Opacity of Emissions from Sources for the Time-Averaged Regulations

Federal Requirements

New Source Performance Standards General Provisions (40 CFR Part 60 Subpart A)

§60.7(a)- (f)	Notification and Recordkeeping
§60.8	Performance Tests
§60.13	Monitoring
§60.11(d)	Compliance with Standards and Maintenance Requirements
§60.19	Notification and Reporting

New Source Performance Standards – Standards of Performance for Stationary Gas Turbines (40 CFR Part 60 Subpart GG)

§60.332(a) and (b)	Standard for Nitrogen Oxides
§60.333	Standard for Sulfur Dioxide
§60.334(c), (h), (i), (j)	Monitoring of Operations
§60.335	Test Methods and Procedures

Prevention of Significant Deterioration (40 CFR 52.21)

§52.21(j)	Control Technology Review [Permit Shield applies only to Best Available Control Technology (BACT) requirements contained in this Permit]

NESHAP Program (40 CFR Part 61)

Subpart M	**National Emission Standard for Asbestos**
§61.145(a)(2)	Standard for demolition and renovation
§61.145(b)(1), (2), (3)(i) and (3)(iv), (4)(i) through (vii) and (4)(ix) and (4)(xvi)	Notification requirements when demolishment involves less than 80 linear meters on pipes and less than 15 square meters on other services and less than one cubic meter off facility components of regulated asbestos containing material (RACM) where the length or area could not be measured previously or there is no asbestos.

Accidental Release Program (40 CFR Part 68)

CAA §112(r)(1)	General duty to identify, prevent and minimize the consequences of accidental releases of listed and other extremely hazardous substances.

Part 68	Chemical Accident Prevention Provisions

Protection of Stratospheric Ozone (40 CFR Part 82)

Subpart F	**Recycling and Emissions Reduction**
§82.161	Technician Certification
§82.166	Reporting and Recordkeeping

Subpart G	**Significant New Alternatives Policy Program**
§82.174(b)	Prohibition against use of substitute
§82.174(c)	Prohibition against use of substitute without adhering to use restrictions
§82.174(d)	Prohibition against use of substitute after added to list of unacceptable substitutes

Federal Requirements

Maricopa County State Implementation Plan (as of 12/31/99)

Regulation I General Provisions

Rule 3 - Air Pollution Prohibited

Regulation II Permits

Rule 22 – Permit Denial – Action – Transfer – Posting – Revocation – Compliance
§F – Permit Posting
Rule 27 - Performance Tests

Regulation III Control of Air Contaminants

Rule 30 - Visible Emissions
Rule 31 - Emissions of Particulate Matter
§§A.1,2,3,4,6,7 - Non-Point Sources of Particulate Matter.
§H.1.a – Fuel Burning
Rule 32 - Odors and Gaseous Emissions
§§A, C, D, F
Rule 310 – Fugitive Dust Sources
Rule 312 – Abrasive Blasting
Rule 331 – Solvent Cleaning
Rule 335 – Architectural Coatings
Rule 340 – Cutback and Emulsified Asphalt
§§301, 501

Regulation IV Production of Records: Monitoring, Testing and Sampling Facilities

Rule 40 Recordkeeping and Reporting
Rule 41 Monitoring §A
Rule 42 Testing and Sampling
Rule 43 Right of Inspection

Regulation VII Ambient Air Quality Standards

Rule 72	**Emergency Episode Criteria**
§72e	Air Pollution Alert Actions
§72f	Air Pollution Warning Actions
§72g	Air Pollution Emergency Actions

APPENDIX D

SCR and CATALYTIC OXIDATION SYSTEM OPERATION AND MAINTENANCE (O&M) PLANS

New Harquahala Generating Company, LLC (NHGC)

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